33rd Year

OCTOBER, 1949

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For Better Gaskets and Seals

USE NEOPRENE TYPE W

the new general-purpose neoprene

Here are the reasons: Minimum compression set, *superior to even the best obtainable with natural rubber,* is possible with Neoprene Type W.

The accompanying data show the compression set properties of similarly loaded Neoprene Type W and natural rubber stocks. Note that the rubber stock is especially compounded for low set. The data prove that the Type W stock is superior to the rubber compound at both 158° F. and 212° F.

This property alone means a tighter seal that retains its effectiveness over longer periods. Coupled with the other advantages inherent in all neoprenes—outstanding resistance to oils and chemicals, heat, sunlight, oxidation and abrasion—it assures a better product.

For more complete information on Neoprene Type W, consult Report 49-3. Extra copies are available. Samples of Type W will be sent on request. Ask your Du Pont representative, or write:

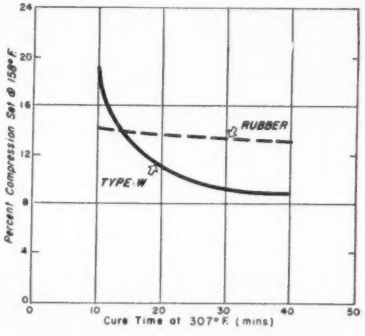
E. I. du Pont de Nemours & Co. (Inc.), Rubber Chemicals Division, Wilmington 98, Delaware.

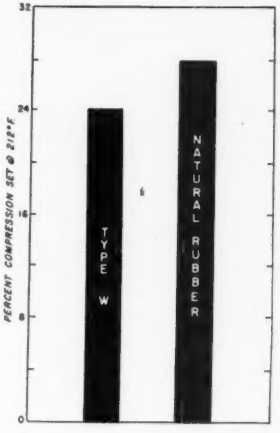
• • •

Tune in to Du Pont "Cavalcade of America," Tuesday Nights—NBC Coast to Coast

TEST RECIPES

NEOPRENE TYPE W	100.0	—
Smoked Sheets	—	100.0
NEOZONE A	2.0	2.0
Stearic Acid	0.5	3.0
Ex. Lt. Cal. Magnesia	2.0	—
SRF Carbon Black	29.0	39.0
Sulfur	—	0.5
PERMALUX	0.5	—
THIURAM E	—	2.5
Zinc Oxide	5.0	5.0





ABOVE—Compression set at 30% constant deflection, 70 hours at 212° F. Specimens cured 25 min. at 307° F.

LEFT—Compression set at 30% constant deflection, 22 hours at 158° F.

DU PONT RUBBER CHEMICALS

E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

THE RUBBER AGE, published monthly by the Palmerton Publishing Co., Inc., Printing Office, East Stroudsburg, Pa. Editorial and Advertising Offices at 250 West 57th Street, New York 19, N. Y. Entered as second class matter October 20, 1933, at the Post Office at East Stroudsburg, Pa., under the Act of March 3, 1879. Subscription in United States, $3.00 a year; Canada, $3.50; Foreign, $4.00. October, 1949, Vol. 66, No. 1.

Electrical connector molded from Hycar rubber by Mines Equipment Company, St. Louis, Missouri.

It handles "HOT JUICE" for planes—SAFELY

YOU'VE often seen air liners getting under way at an airport. A serviceman brings out a portable electric generator, plugs it in, gets the plane's huge engines going.

The plug that connects the electricity to the plane has a vital part in this job. And the plug pictured above *more* than meets the tough service requirements. It's made of Hycar OR-25 EP (easy processing), a special oil-resistant American rubber with outstanding advantages.

Hycar OR-25 EP resists heat generated by current, stays flexible at high temperatures. It resists oxidation, aging, weather and wear. Most important—it resists abrasion and chipping, and neither oil nor grease will harm it.

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Reg. U. S. Pat. Off.
American Rubber

Important production economies, such as shorter mixing cycles, are made possible by the superior processing characteristics of Hycar OR-25 EP. Find out the many ways that versatile Hycar may be used to help build your sales and profits. For complete information, please write Dept. HB-10, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

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KNOCK out your processing problems with Philblack A! This fine, fast-curing HMF black incorporates rapidly. Extrudes and molds remarkably well, maintaining an exceptionally smooth surface. The suppleness and pliancy of uncured Philblack A stocks are retained after vulcanization, too.

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Rigidity
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TEXTILE *Cable Respooler Spool of light alloy steel with tough, durable ends molded of* **Plio-Tuf.** *Photo courtesy Akron Spool & Manufacturing Co.*

You get them all with Plio-Tuf

TEXTILE spools like this must have *all* the characteristics listed above. They take a terrific beating in service—have to resist the tremendous force of the "end-thrust" produced by the rapid reeling of thread—the impact of being thrown into carts after being filled. Ends of these spools are now being molded of **Plio-Tuf**—Goodyear's blend of Pliolite S-6 resin and natural or synthetic rubber. One of the largest users of these spools states they are THE BEST HE HAS SEEN IN MANY YEARS OF MILL EXPERIENCE.

Plio-Tuf brings to a wide range of products the qualities listed here. In addition, it is easily mixed and processed, gives faithful mold reproduction, is easy to machine or buff to a high gloss, and is resistant to water and chemicals. By varying the proportions of resin and rubber, and incorporating various loadings, you can secure a wide range of weights, hardness, rigidity, impact resistance and color with **Plio-Tuf.**

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● Industrial Ovens coating, evaporating and fusing equipment is increasing production, improving quality and cutting costs for many of the major coaters, proofers and converters of textiles, papers, films and foils. Besides offering higher speed, greater quality control and lower cost, this equipment is extremely flexible and safe in its operation.

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Write for "Blueprint for Industry, Part V—Coating and Handling Equipment for Textiles, Papers, Films and Foils".

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Marvinol's superior flexibility in low temperatures pays off in products subjected to severe exposure and cold weather.

If your product is one of these basic plastic shapes... one made from them, or even one that has possibilities for manufacturing from plastics, you'll find production time-savings and extra quality in using Marvinol vinyl resin. To improve your product test this remarkable vinyl polymer.

SEE WHAT Marvinol OFFERS YOU

Processors find Marvinol a big time-saver because of its shorter pre-mix, open mill and Banbury cycles.

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Marvinol may be extruded, calendered, injection molded, made into dispersions for casting film, spreading on fabric and slush molding.

Field engineers and customer research laboratories provide helpful technical service to Marvinol vinyl resin users.

THE ENTIRE EFFORTS of our modern development laboratories are for our customers' benefit. All the formulation, compounding and processing information developed here is at your disposal since it is only through you that Marvinol-based products reach the consumer market. Write to Chemicals Division, Dept. R-10, THE GLENN L. MARTIN COMPANY, BALTIMORE 3, MD.

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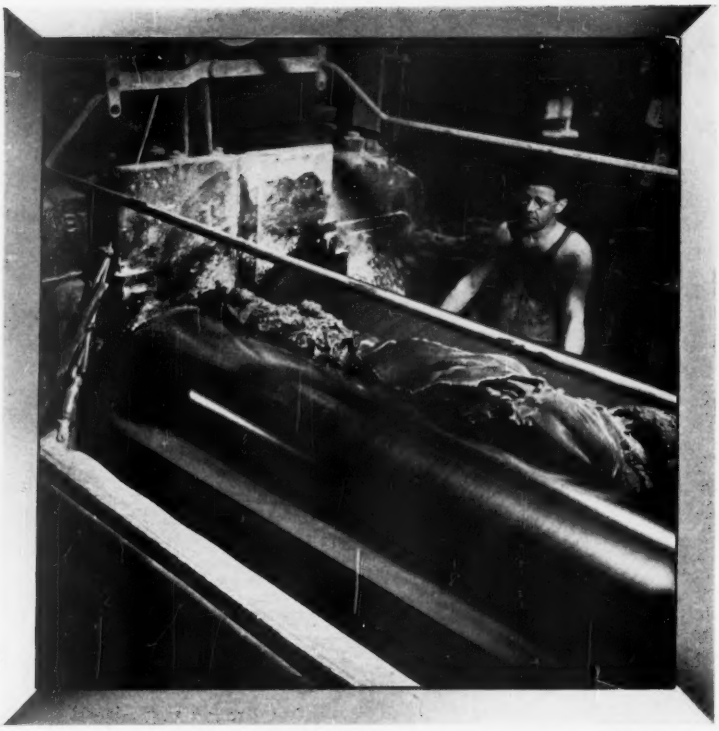
MANUFACTURERS OF: Dependable Martin 2-0-2 airliners • Advanced military aircraft • Revolutionary rockets and missiles • Electronic fire control systems • Versatile Marvinol resins (Martin Chemicals Div.) • **DEVELOPERS OF:** Mareng fuel tanks (licensed to U. S. Rubber Co.) • Stratovision aerial rebroadcasting (in conjunction with Westinghouse Electric Corp.) • Honeycomb construction material (licensed to U. S. Plywood Corp.) • New type hydraulic automotive and aircraft brake • Permanent fabric flameproofing • **LEADERS IN RESEARCH** to guard the peace, build better living in far-reaching fields.



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Fade-O-Meter test-checks discoloring of various anti-oxidants. Panel, below, shows superiority of Wing-Stay S compared with six leading anti-oxidants. Center strip is unexposed white control stock.

Here's why YOU should use *Wing-Stay S*

The Superior Non-Staining Anti-Oxidant

THESE pictures show you that exceptional non-staining and non-discoloring properties, coupled with good protection to rubber compounds, are yours with Wing-Stay S, another product of Goodyear Research. This amber-colored liquid anti-oxidant is now available in production quantities.

The panel at the right shows that Wing-Stay S, in natural rubber, has the best balance of non-staining and anti-oxidant properties, compared with six of the most popular anti-oxidants. It was unmatched in maintaining color—showed only very slightly more discoloration than the control stock without anti-oxidant. It was among the best in providing protection to the rubber in the O_2 bomb, N_2 bomb, Gear Oven and Fade-O-Meter.

In GR-S, tests showed that when Wing-Stay S is added to the latex, the same advantages in non-discoloration and protection properties are realized.

For full details and sample of Wing-Stay S, write:

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MARBON "8000"

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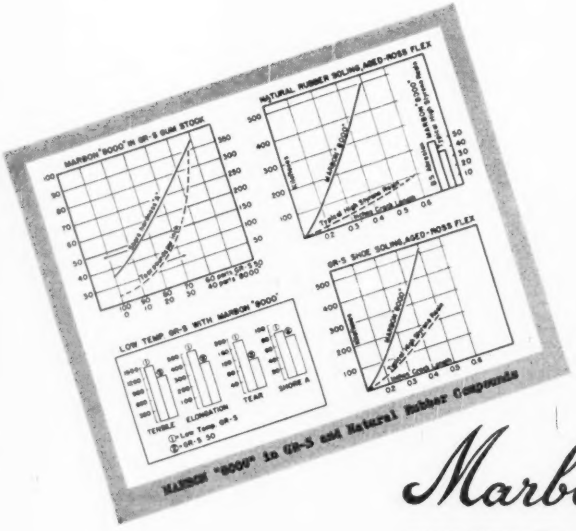
MARBON "8000" can be used as a processing aid and reinforcing agent for natural and synthetic rubber. Its low specific gravity and high unit volume reinforcing characteristics, light color and good dielectric properties permit wide latitude in compounding for specific uses and at the same time places it in a competitive position with other reinforcing agents.



In general, MARBON "8000" will improve processing, increase tensile, and help reduce shrinkage of the stock. Try it in sole stocks, floor tile, hard board stocks, gaskets, caster wheels, electric insulation, hard rubber and mechanical goods.

Write for further particulars and a working sample

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4. A milling capacity large enough to fill all orders promptly—regardless of size.
5. A wide range of particle sizes from 200 mesh to minus 10 microns.
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For samples and prices write to

CALCIUM PRODUCTS DIVISION

THE GEORGIA MARBLE COMPANY

TATE, GEORGIA

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INSOLUBLE SULPHUR

An Amorphous Sulphur Prepared Especially to Prevent Bloom in Uncured Rubber Stocks

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Repair stocks and all stocks that are to remain in the uncured state for any prolonged period need straight CRYSTEX without blending. Tire carcass stocks that normally reach building operation promptly may not require the full 85% insolubility of CRYSTEX. In mechanicals, building quality and freedom from mold blemishes are obtained when CRYSTEX is employed.

Why not check the current low price of CRYSTEX Insoluble Sulphur? The chances are you can use CRYSTEX advantageously in your operations.

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BEACOFINISH—a unique family of coating materials conceived to give your products greater durability and eye appeal. These highly concentrated wax emulsions that can be diluted with up to four parts of water can be used with the utmost safety and economy.

BEACOFINISH is therefore of four-fold importance to you:—

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BEACOFINISH can be applied by dipping, sponging, spraying or brushing—dries in about 20 minutes—faster if force-dried—to give a hard protective coating of great elasticity.

BEACOFINISH may be ordered in Neutral or Black, in varying degrees of luster from brilliant to dull. It is so concentrated, from one drum you can obtain potentially up to five drums of superior coating for your products.

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Let us show you how BEACOFINISH can make your products more attractive and saleable—protect them from damage—you from loss—in production and transit!

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If not, we'll call on our extensive research and development staff. These men make new problems their business . . ."help wanted" their specialty.

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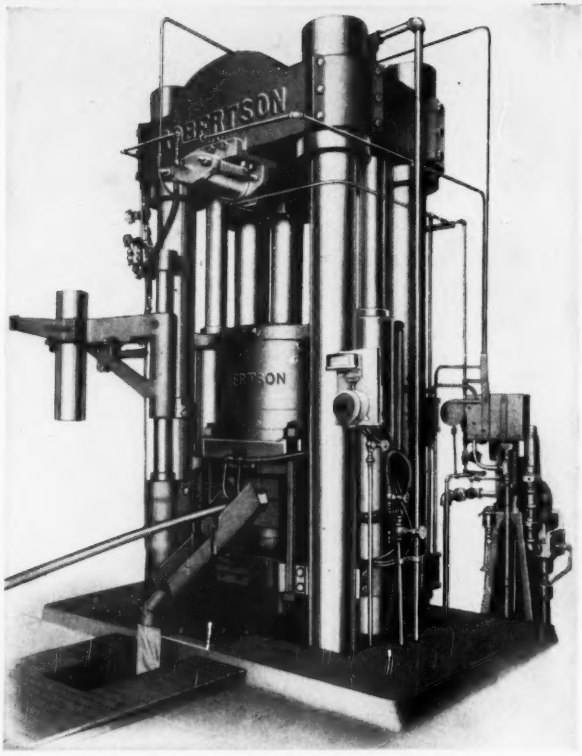

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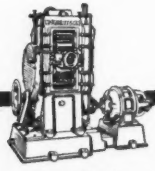
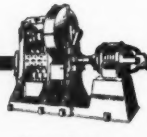


Lead Sheath Stripping Machine



Hydraulic Pump

Open Lead Melting Pot

SANTOCURE

The versatile accelerator

natural
synthetic
reclaimed
RUBBER

LOOK AT THESE OUTSTANDING QUALITIES:
Good acceleration for GR-S, GR-A, rubber and reclaim.
Produces cures under a wide variety of conditions.
Provides high tensile — high modulus.
As much or little delayed action as desired.
Clean, sharp molding. Excellent aging.
No precuring, scorch, bin curing, or setup in re-running scrap.

There is no substitute for Santocure as an accelerator for vulcanization of natural, synthetic and reclaimed rubber. This versatile Monsanto product has won wide acceptance because it saves acceleration costs, improves quality and adds a greater margin of processing safety. Furthermore, Santocure is stable in storage and requires no special technique or handling for its use in rubber or synthetics.

Santocure is available for immediate shipment in any quantity. For detailed information and samples, write to MONSANTO CHEMICAL COMPANY, Rubber Service Department, 920 Brown Street, Akron 11, Ohio. Use the convenient coupon if you prefer.

Santocure: Reg. U. S. Pat. Off.

MONSANTO
CHEMICALS — PLASTICS

MONSANTO CHEMICAL COMPANY RA-2
Rubber Service Department
920 Brown Street, Akron 11, Ohio
Please send me further information ( ); samples ( ) of Santocure.

Name_____ Title_____
Company_____
Address_____
City_____ State_____

SERVING INDUSTRY...WHICH SERVES MANKIND

RECIPE

from the Barrett Rubber Research Laboratory

FOR

CUMAR*

RESIN, MH 2½ GRADE,

in Natural Rubber

The comparative data given here illustrate the excellent behavior of CUMAR* Resin, MH 2½ grade, when used as replacement material for 10 parts (weight basis) of natural rubber. It promotes smoother processing properties and lessens danger of scorching. It is an effective and economical extender for natural rubber, and contributes to the retention and/or improvement of significant physical properties. Where better tear resistance is required, it is exceptionally useful CUMAR* Resin, MH 2½ grade, has found wide application in molded and extruded compounds used in the automotive and aviation industries, in footwear, soles and heels, flooring, drug sundries and household goods, mechanicals and insulated wire stocks, cements and adhesives, in white and light-colored items, and in non-staining and non-migrating compounds for uses involving contact with lacquers and enamels.

RECIPE

Smoked Sheets	100.0	90.0
CUMAR* Resin, MH 2½ grade	....	10.0
Calcium Carbonate (Precipitated)	75.0	75.0
Zinc Oxide	5.0	5.0
Stearic Acid	2.0	2.0
"AMINOX"	1.0	1.0
Sulfur	3.0	3.0
Benzothiazyl Disulfide	1.0	1.0
Total	**187.0**	**187.0**
Specific Gravity	1.31	1.33
Rubber Hydrocarbon, % by weight	53.5	48.2
Rubber Hydrocarbon, % by volume	76.0	69.5
Mooney Viscosity, ML, 4 min. @ 212 F.	10	19
Mooney Scorch, ML, 250 F.		
Minutes	**Viscosity**	
1	10	17
5	8	13
10	8	12
15	11	13
20	65	14

Press Cure @ 307 F. (60 lb.) — 10 minutes

		Aged 14 Days		Aged 14 Days
	Unaged	@ 70 C.	Unaged	@ 70 C.
Tension and Hardness Data				
Stress, 300%, psi.	600	850	500	750
Stress, 500%, psi.	1600	2200	1500	2050
Tensile, psi.	3250	2600	3300	3100
Elongation, %	680	550	730	630
Permanent Set, %	26	19	34	33
Hardness, Shore A.	50	56	46	52
Tear Resistance, Angle, Pounds per One Inch Thickness	215	200	250	245
Press Cure @ 307 F. (60 lb.) — 15 minutes				
Abrasion Resistance, DuPont	....	480	....	470
Compression Set, 40% Constant Deflection, %	26.8	....	27.3	....
Resilience, Yerzley, %	86.0	92.5	80.5	88.0
Rebound, Goodyear-Healey, %	73.5	81.1	72.3	78.7

*Reg. U. S. Pat. Off.

THE BARRETT DIVISION

ALLIED CHEMICAL & DYE CORPORATION

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LOW-COST PRODUCTION NEEDS - -

Today's low-cost production needs have brought many manufacturers to a definite appreciation of SILENE EF as a *saving factor* in material cost . . .

SILENE EF provides these other factors, too . . .

- ★ Low Gravity
- ★ High Hardness
- ★ High Modulus
- ★ Increased Resistance to Abrasion
- ★ Excellent Hot and Cold Tear
- ★ Exceptional Aging
- ★ Reinforcing and Stabilizing Action in Vinyl Resin Compounds . . .

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Columbia Chemical Division

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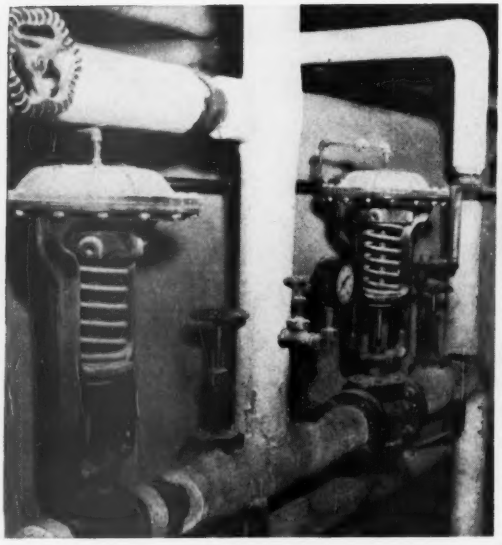
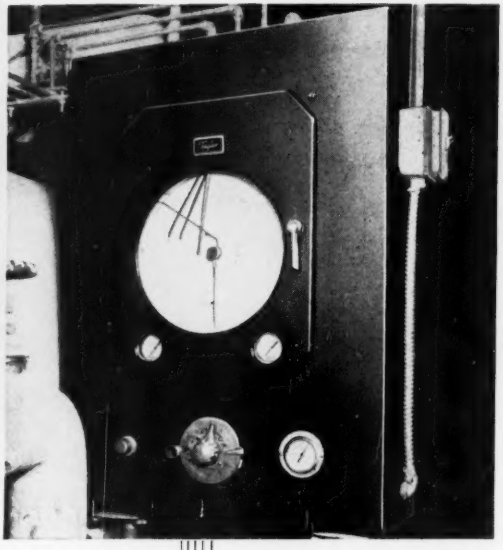
AT LOWEST COST





YES, this Taylor Vulcanizer Control System is delivering consistently uniform cures at lowest cost for the Goodyear Tire and Rubber Company, Akron, Ohio. It's a Taylor Packaged Unit with Double Duty Process Timer—running one of a battery of big mechanical goods vulcanizers. The operator simply loads the vulcanizer and sets the cure time. Then Taylor Control takes over with an automatically coordinated system of time and temperature . . . faithfully repeating each cycle again and again. Results for Goodyear—

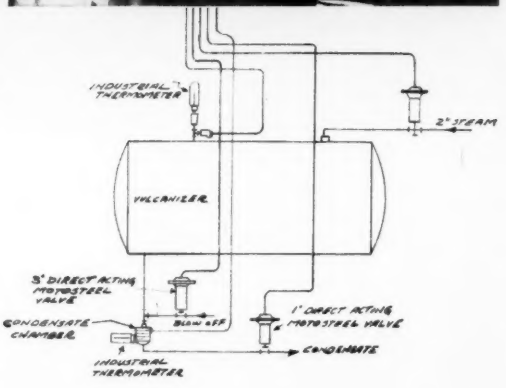
Increased production through increased efficiency . . . fewer rejects.

Greatly reduced costs through steam savings.

A big saving in manpower. Operators released for other duties—and *from* all responsibility for efficient processing.

We believe there's a moral in this Taylor Packaged Unit story for anyone who's interested in closely coordinated control of any important rubber process. It might be called *instrumental teamwork*, and it breaks down into three points:

1. ***The instruments in every Taylor Packaged Unit are designed from the very beginning to work together.***
2. ***You have the economy and dependability of simple air-operated control.***
3. ***You have a complete control system in one neat, compact package . . . good housekeeping for your plant and easy maintenance for your men.***



Ask your Taylor Field Engineer! He'll analyze your problem, then he'll turn the job over to Taylor Application Engineers—specialists in instrumentation. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.*

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

Piccolyte

the Versatile Resin

gives you all this and LOW COST TOO!

- Light Lemon Color
- Color is Stable
- Hydrocarbon Structure
- No Acidity
- No Saponifiable Matter
- Chemical Resistance
- Solubility in Aliphatic Naphthas
- Thermoplastic

This highly-useful pure hydrocarbon, thermoplastic terpene resin has the same carbon-to-hydrogen ratio as plantation rubber. It has excellent tack-producing properties with natural rubber. Pale color permits light-color formulations with minimum scrap. Soluble in low-cost naphthas, and in pentane and hexane for making solvent-type rubber cements. It is non-toxic, chemically inert, compatible with most substances. Made in nine grades, uniformly dependable in quality.

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Please send me a free sample of Piccolyte, and your new bulletin. I wish to investigate Piccolyte for (application).....

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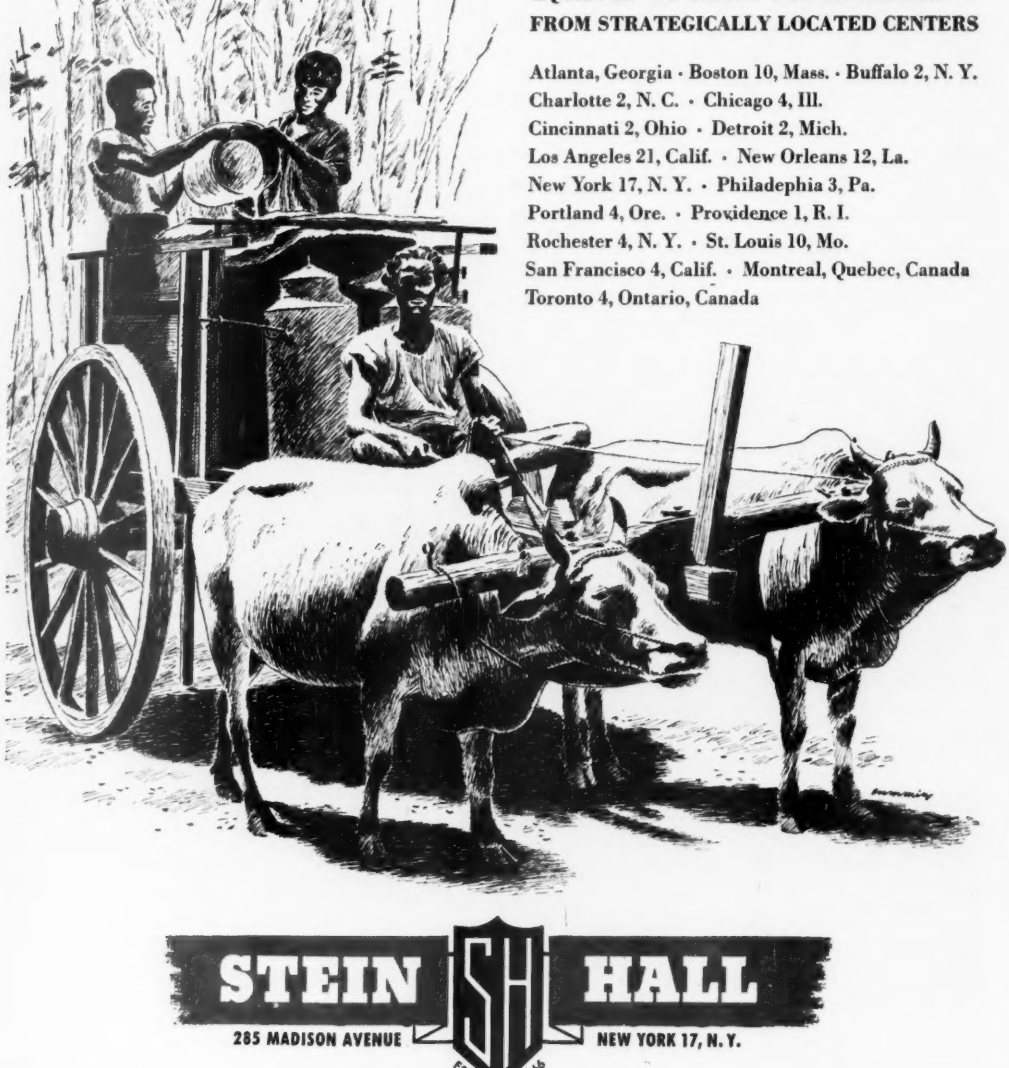
(RA)

Crude rubber and natural latex



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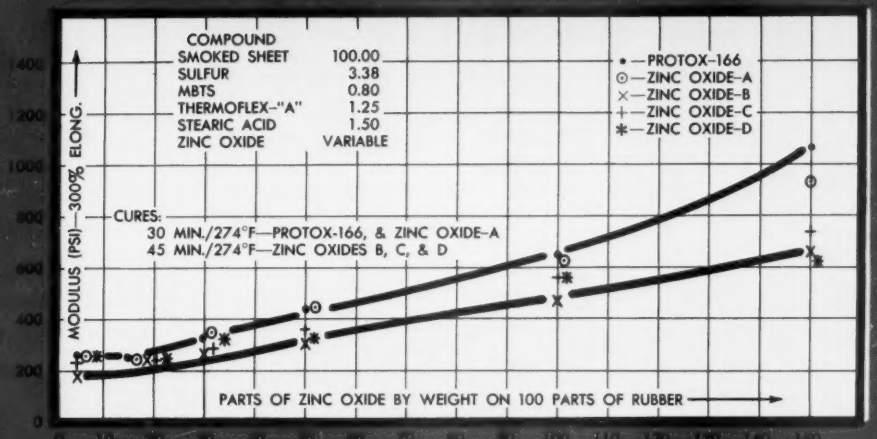
IN HIGH ZINC COMPOUNDS...

USE **PROTOX-166***

(THE BETTER-DISPERSING ZINC OXIDE)

for **HIGHER MODULUS**

MODULUS PROPERTIES OF ZINC OXIDES



Protox-166 makes it easier to formulate stiffness into high zinc compounds, as it imparts higher modulus than other zinc oxides. Moreover, as zinc volume loading increases, Protox-166 shows a more rapid increase in stiffening properties.

At 150 parts loading, Protox-166 develops in a typical compound nearly double the modulus (at 300% elongation) of other oxides, such as Zinc Oxides B, C or D (see chart). In fact, 100 parts of Protox-166 in that compound imparts the same modulus as 150 parts of Zinc Oxides B, C or D.

The good modulus properties of Protox-166 stem from two sources: (1) its special base of XX-4 Zinc Oxide and (2) its propionic acid treatment.

For these reasons, Protox-166 provides better dispersion in rubber, and thus gives higher reinforcement which is reflected in higher modulus.

U. S. Patents 2,303,329 and 2,303,330

PROTOX-166 GIVES YOU ALL THESE ADVANTAGES

COMPARED WITH OTHER ZINC OXIDES

LESS MOISTURE PICKUP

LOWER DRY BULKING

SPEEDS MIXING
- Permits larger master batches
- Faster incorporation
- Better dispersion
- Lower power consumption

INHIBITS SCORCH

IMPROVES TUBING AND CALENDERING
- Provides plasticizing effect
- Imparts smoother tubing
- Reduces die swell
- Cuts calender shrinkage
- Gives cooler running stocks

HELPS REINFORCEMENT
- Improves tensiles
- Raises tear resistance
- Increases modulus
- Steps up resilience

For further details, see "The Activator," Vol. 9, No. 1.

If you are not yet using Protox-166, may we send you samples?

HORSE HEAD PRODUCTS

THE NEW JERSEY ZINC COMPANY

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Proof of the Pudding

"DOC" MacGEE SAYS: What's the real test, the final proof, of the worth of any product or service? To the user of industrial solvents, the answer lies in the measure of operating efficiency, economy, and quality of final product his solvents are bringing about.

In many cases, the degree of purity, uniformity, close boiling ranges, and freedom from foreign tastes and odors largely determine how smoothly, how efficiently, how successfully, and how economically a plant is operating. And, in case after case where this is true, users are switching to SKELLYSOLVE . . . because they are seeing how SKELLYSOLVE is helping countless other plants save money and produce better products.

That's the "proof of the pudding," the honest test, of SKELLYSOLVE. It won't take you long to discover the advantages of SKELLYSOLVE'S purity, uniformity, close boiling ranges, and freedom from foreign tastes and odors. It won't take you long to realize the value of SKELLYSOLVE'S famed dependability of supply—which virtually *assures* you of an uninterrupted supply, even when emergencies arise.

And, should you ever desire competent counsel on production problems, or should unusual trouble suddenly develop, you will quickly see what it means to have available the skill and experience of trained SKELLYSOLVE Technical Fieldmen.

Do as more and more industrial solvent users are doing every day—line up with dependable, *proved* SKELLYSOLVE, made by the pioneer of large scale production of hexane, heptane, and octane type naphthas from natural gas. Get the full SKELLYSOLVE story now . . . contact us today.

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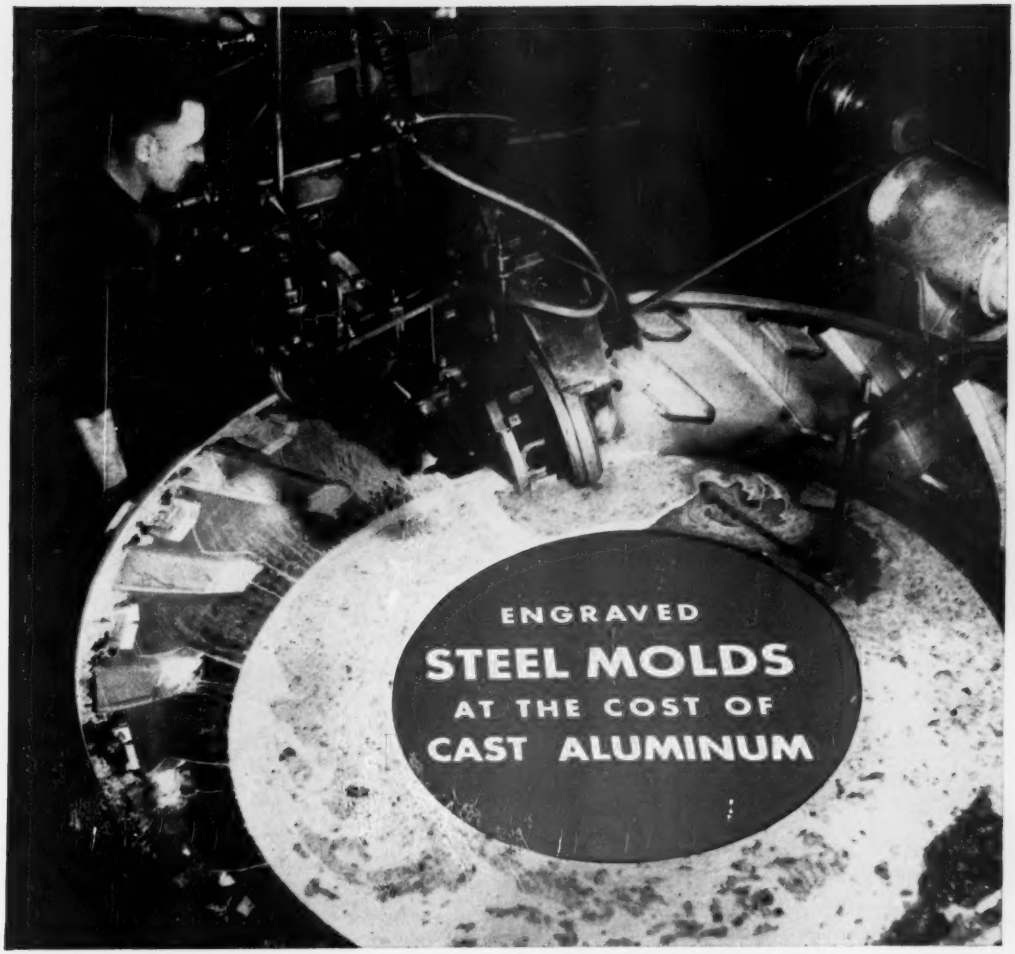
SOLVENTS DIVISION, SKELLY OIL COMPANY, KANSAS CITY, MO.



BRIDGWATER'S determination to produce economically tire molds of whatever characteristics the industry desires is nowhere better demonstrated than in the giant off-the-road tire mold shown above.

This is an engraved steel mold. It costs no more to produce, possibly even less, than a cast aluminum mold of the same size.

The industry generally recognizes that an engraved steel mold possesses greater accuracy and durability. But, until the development by Bridgwater of heavy-duty precision engraving machines, steel molds for off-the-road and farm tractor tires were prohibitively costly, if not impossible to make.

Today, with molds by Bridgwater, giant off-the-road and farm tractor tires can be molded with the same precise tread design and appearance characteristic of the finest passenger car tire.

THE BRIDGWATER MACHINE COMPANY

Akron, Ohio

FOR BETTER MOLDS FOR BETTER TIRES *SPECIFY* BRIDGWATER

Fabricators find it's easy to make their own silicone rubber compounds with General Electric silicone gum.

NOW AVAILABLE!

G-E SILICONE GUM
Make your own compounds— increase profits

Now you can increase your rubber molding profits by making your own compounds—in your own plant—by using G-E silicone gum. Parts made from such compounds open up many new sales possibilities. For G-E silicone rubber, unlike ordinary rubber, makes products with amazing heat, cold, and chemical resistance. This means new sales, more profits, for *you*.

Compounds made from G-E silicone gum are easy to handle, smooth-flowing, have a short molding cycle, and hold their uncured shape. They can be either extruded or molded in conventional rubber fabricating equipment, using slight modifications in procedure.

Molders who prefer their materials ready-made can continue to buy G-E silicone compounds. And other G-E silicone products of value to molders of natural and synthetic rubber stocks are G-E silicone mold release agents.

Find out more about how G-E silicones can help you make better profits and turn out better products by writing Section 41-10, Chemical Department, General Electric Company, Pittsfield, Mass.

G-E Silicone Mold Release Agents—to reduce rejects, improve your product.

G-E Silicone Compounds—for making rubber parts with new sales possibilities.

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DIXIE 50 an HMF black . . . expertly made, and featured by ease of mixing, ready dispersion, fast extrusion, and finest appearance of stock. It is a quick curing black, yielding high modulus and tensile, high resistance to tear, abrasion, flex cracking, and high resilience. It ages well. Specify DIXIE 50 for blending with harder processing blacks and for tires, tubes, footwear, cable jackets and mechanical goods.

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GET STEARIC ACID FROM EMERY

Because . . . no matter what quantities or kinds of fatty acids you use, you want two things for sure: products that do not vary from shipment to shipment—that meet your specifications exactly; *and* the greatest dollar value consistent with your needs. That's why we urge you to BUY EMERY!

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Vegetable Fatty Acids*—cottonseed, soya, coconut. *Hydrogenated Fatty Acids. Glycerides.

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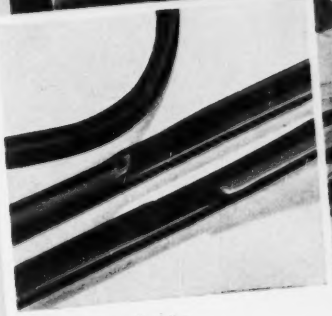
Flexible Molds
Flooring
Mannequins
Rubber Dolls
Advertising Novelties

DOW CORNING SILICONE MOLD RELEASE EMULSION NO. 35A

Gives greater stability in use and in storage, greater stability in contact with hard water.



Fewer Rejects

Intricate molded products such as these automobile window ventilator sealing strips must have uniformly finished edges and be free of tears and uneven surfaces. DC Mold Release Emulsion No. 35A is used in molding this product by Yale Rubber Mfg. Co. because it improves stock flow to intricate parts of the mold thus eliminating not-filled-out rejects.

Easier Release

Roller skate wheels molded of heavily loaded stock at Yale Rubber Mfg. Co., cannot be flexed in stripping. Proper release of such pieces depends on the slip of the mold surface. DC Mold Release Emulsion No. 35A thoroughly wets and adheres to metal surfaces, permitting unusually easy release of molded pieces regardless of the stock.

Improved Finish

Gear shift lever boots molded of light colored stock at Yale Rubber Mfg. Co. must match the decorative colors in automobile interiors. Consequently, the boots must be clean, perfectly shaped and unstained when taken from molds. DC Mold Release Emulsion No. 35A will not stain the parts and it leaves molds clean, free from carbonaceous deposits.

Call our nearest branch office for technical assistance on molding problems or write for data sheet No. AE-10.

Dow Corning

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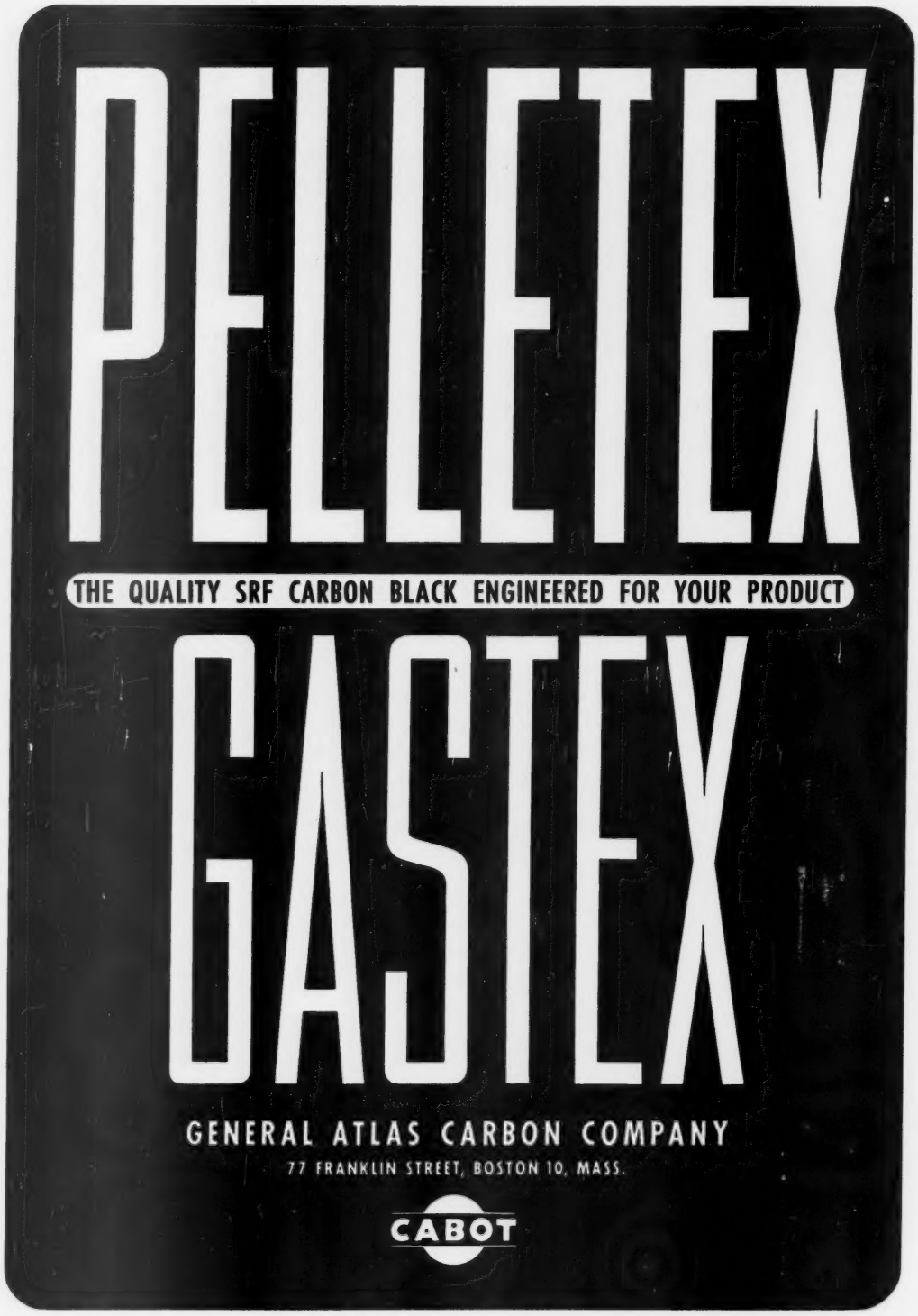
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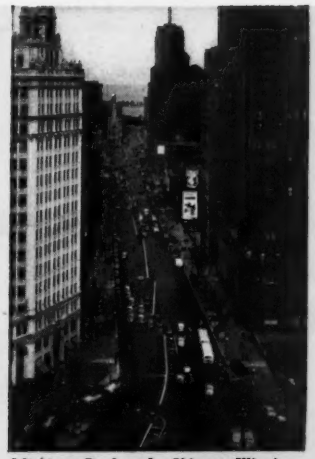

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Calco

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You will find the answer by comparing quality and figuring your savings per 100 pounds of rubber hydrocarbon.

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NATIONAL-STANDARD *braided wire braid*

makes steam hose *tougher*

simplifies production

HERE'S a suggestion that might help you improve the strength and life of your hose, while reducing production costs! Simply weigh carefully *all* the advantages you stand to gain by using National-Standard flat braided wire braid in your hose construction.

For example, flat braided wire braid eliminates the problem of single wire breaks and uneven loops. You save the time and material normally lost in attempting to equalize wire length and tension for uniform stress distribution. Production is greatly simplified. Quality can be better controlled . . . with fewer seconds and rejects. Moreover, unequaled mechanical adhesion prolongs hose life and eliminates a frequent cause of failure.

Why not talk it over with a National-Standard engineer? As usual, National-Standard is ready to give you all the help you want . . . all the benefit of over 40 years of intimate experience with wire-in-rubber problems.

NS NATIONAL-STANDARD Company NILES, MICHIGAN

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WAGNER LITHO MACHINERY	*Jersey City, N. J.*	Lithographing and Special Machinery
WORCESTER WIRE WORKS	*Worcester, Mass.*	Round Steel Wire, Small Sizes

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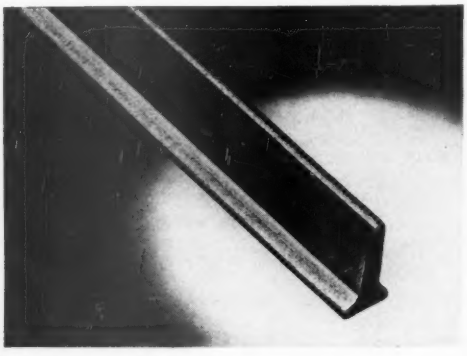
points of interest

ABOUT "COLD RUBBER" AND CONTINEX SRF

- Smooth tubing shown in the illustration can be achieved more economically with no sacrifice in processing safety and speed.
- Approximately 35% higher loadings of Continex SRF, formerly impossible with smooth-out HMF.
- Continex SRF in "Cold Rubber" enables the production of smooth tubing-channel compounds having minimum radial swell heretofore impossible with GR-S.
- Satisfactory compounds similar to the illustration can be produced containing from 0 to 50 parts reclaim per 100 parts "Cold Rubber."
- A non-staining Continex SRF can be supplied for specialty items where staining is objectionable.



Samples of Continex SRF and Continex SRF-NS (Non-staining), as well as formulations, will be supplied on request.

Also, for more complete information, write for Technical Service Report CB-3 "Smooth Tubing *Cold Rubber* Channel Compounds."

Continex SRF *can also be used in* natural *rubber smooth tubing-channel compounds with up to 35% higher loadings than are possible with a smooth-out type HMF black. Technical Service Report CB-2 gives details. Write for your copy* today!

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a non-staining, non-discoloring oxidation inhibitor ...to add lasting quality to rubber products

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Boiling point	265° C
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Vapor Pressure	20 mm. at 147° C 100 mm. at 191° C
Viscosity	3.47 centistokes at 80° C 1.54 centistokes at 120° C 0.920 centistokes at 160° C
Solubility in absolute ethanol	26% by wt. at 20° C 46% by wt. at 40° C

Other Shell Chemical products are: Acetone, Acrolein, Epichlorohydrin and Glycerol Dichlorohydrin.

IN RUBBER PRODUCTS — especially those of light color — Ionol provides superior anti-oxidant properties. It also insures freedom from stain and discoloration . . . *even after prolonged exposure to light, air and heat.* In addition, Ionol has a high degree of compatibility with either natural or nitrile rubber and is not subject to leaching by dilute aqueous or alcoholic alkali.

Ionol is a light colored, granular material of high purity. It is readily soluble in petroleum fractions and most organic solvents, but is insoluble in water.

The unique anti-oxidant and non-discoloring properties of this compound suggest many other important applications. For example, as a stabilizer and anti-oxidant for soap and as an anti-skinning agent for paint and ink.

You may find that Ionol can help your product. Why not send for a sample?

A letterhead request to any of the Shell Chemical district offices listed below will bring you technical information and a sample.

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The data furnished in the BULLETIN is of utmost importance to all rubber manufacturers as well as to Brokers, Dealers, Importers and Commodity houses of all kinds. Specimen copies will be furnished without charge on request.

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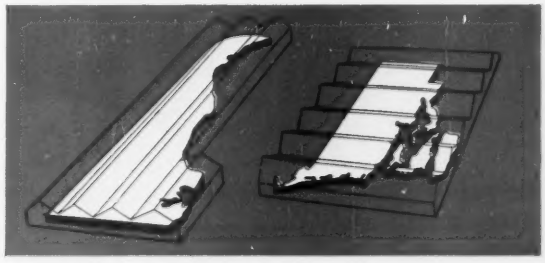

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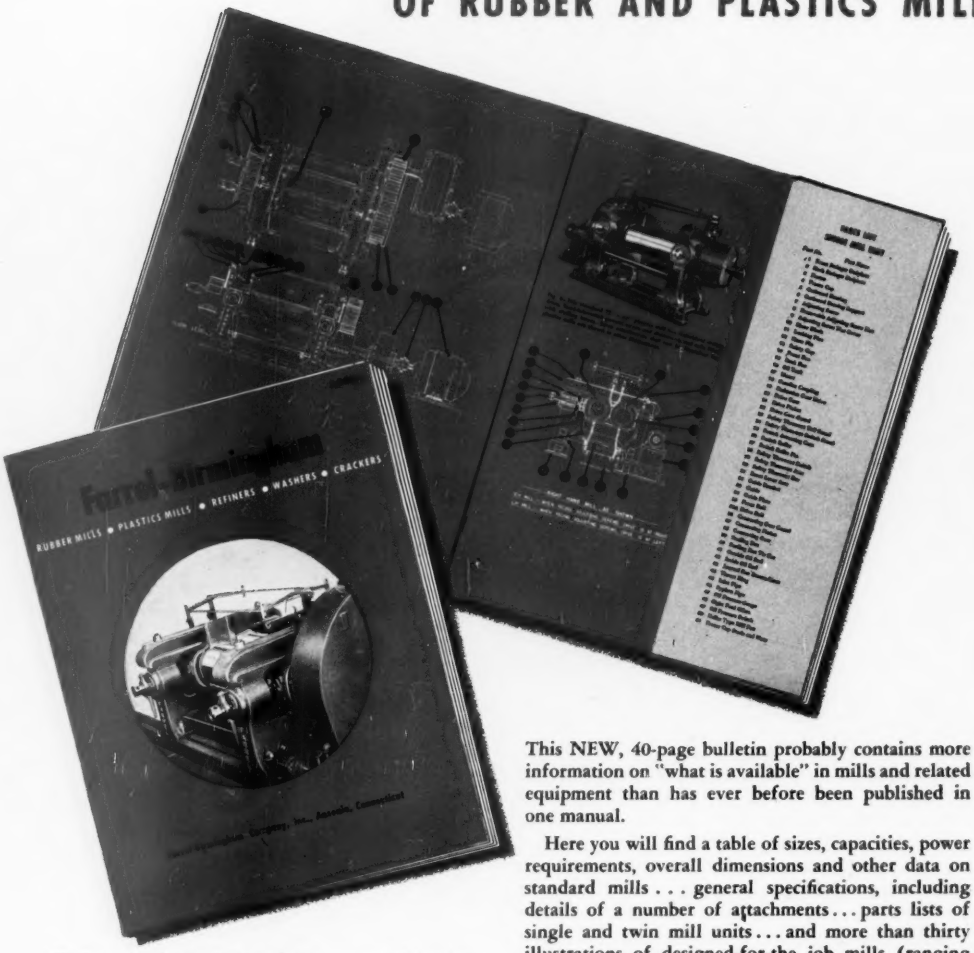

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Synthetic Rubbers

Silicone Rubber—A New Synthetic Elastomer. *S. L. Bass.*
Comparisons of Natural and Butadiene-Styrene Rubbers. *J. H. Fielding* and *R. P. Dinsmore.*
Low Temperature Performance of Butyl Inner Tubes. *R. J. Adams, E. J. Buckler,* and *G. G. Wanless.*
Preparation and Properties of Buna N Type Copolymers. *J. F. Nelson* and *B. M. Vanderbilt.*
Some New Compositions based on Condensation Rubbers. *D. A. Harper, W. F. Smith,* and *H. G. White.*
Alteration of Neoprene by Polymerisation Temperature. *H. W. Walker* and *W. E. Mochel.*

Chemistry of Rubber

Nature of the Sulphur Linkages in Rubber Vulcanisates. *G. F. Bloomfield.*
Hydrochlorination of Rubber in Latex. *G. J. van Veersen.*
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Kinetic Study of Rubber Oxidation. *J. Le Bras* and *A. Salvetti.*

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Refractive Index of Rubber for Different Wave-lengths. *L. A. Wood* and *L. W. Tilton.*
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Experimental Methods in the Osmometry of Dilute Rubber Solutions. *H. W. Melville* and *C. R. Masson.*

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RUBBER AGE

Vol. 66, No. 1 OCTOBER, 1949

Additional Developments in the Field of Testing Procedures for the Evaluation of Natural and Synthetic Rubbers and Plastic Elastomers

Sponsored by Bureau of Ships, Navy Department

By THEODORE A. WERKENTHIN

Principal Materials Engineer, Bureau of Ships, Navy Department, Washington, D. C.

Part I

THE compilation of testing procedures published by the author in RUBBER AGE in 1946* has been widely used by government and industry testing agencies in the evaluation of natural and synthetic rubbers. The system of test classification presented in the above mentioned article essentially forms the basis of the classification of tests employed in the revision of Federal Specification for Rubber Goods: General Specifications (Methods of Physical and Chemical Analyses), ZZ-R-601a. The enormously increased complexity of uses of rubber in Naval applications has required the development of a number of additional testing techniques by the several laboratories under Bureau of Ships cognizance.

The present supplement has been prepared in order to bring the previous work up-to-date and to comply with the considerable number of requests to compile such a supplement. It will be noted that, in addition to new tests designed to measure more or less fundamental or basic properties, there are portrayed a number of simulated service test methods.

Since the present article is merely a continuation of the previous compendium, the same classification outline of tests previously used will be employed and is merely being extended.

The accompanying article is the first of a new series covering a number of testing techniques originated in the past few years by various laboratories associated with the Bureau of Ships of the Navy Department. Over 70 tests originated prior to 1946 were described by the author in a series of articles published in RUBBER AGE in 1946. Approximately 30 additional tests developed since that time are covered in the present material. An even 100 illustrations were used in connection with the original material, and approximately 50 will be used with the present supplement. There is hardly a rubber manufacturing company which is not vitally concerned with these testing procedures and it is with this thought in mind that we are pleased to publish this valuable data.—EDITOR

* "Developments in the Field of Testing Procedures for the Evaluation of Natural and Synthetic Rubbers and Plastic Elastomers Sponsored by Bureau of Ships, Navy Department," by Theodore A. Werkenthin, *Rubber Age (N. Y.)*, May, June, July, August, September, October and November, 1946.

Note: The opinions or assertions contained herein are the private ones of the author and are not to be construed as official or reflecting the views of the Navy Department or the Naval service at large.

OUTLINE OF NEW TESTS DISCUSSED

A. Adhesion Type Tests
- 10. Strut Flexing Adhesion Test.
- 11. Shaft Flexing Adhesion Test.
- 12. Hydraulic Adhesion Test for Hard and Soft Rubber Coated Shafts.
- 13. Orthogonal Strip Adhesion Test.
- 14. Puget Sound Tension Adhesion Test.
- 15. Graphic Demonstration of Stresses during Cleavage Adhesion Test.
- 16. Vibration and Sealant Properties Test.

B. Thermal Type Tests
- I. *At Elevated Temperatures.*
  No additional tests.
- II. *At Low Temperatures.*
  - 13. Low Temperature Flexibility Test for Hose of Small Diameter.
  - 14. Morris Compressometer Test.
  - 15. Special Equipment for Low Temperature Compression Set.
  - 16. Diaphragm Flexibility Test.
  - 17. Modified Cantilever Beam Flexural Test.
  - 18. Rapid Action Compression Set Apparatus.
  - 19. C.-Clamp Method for Cold Compression Set.
  - 20. Low Temperature Sealing Tests.

C. Rheological Type Tests
- 23. Relative Modulus Test.
- 24. Hose Kinking Resistance Test.
- 25. Hose Crushing Resistance Test.

D. Chemical Type Tests
No additional tests.

E. Light and Weather Resistance Tests
- 4. Mare Island Rubber Laboratory Procedure for Determining Ozone Resistance.

F. Diffusion Tests
No additional tests.

G. Wearing Abrasion Tests
No additional tests.

H. Swelling and Immersion Tests
- 6. Special Jig for Measuring Water Absorption and Penetration of Propeller Shaft Covering.

I. Vibration and Shock Absorption Tests
- 4. Apparatus for Determining Natural Frequency of Shock Mounts.
- 5. Apparatus for Determining Drift Characteristics of Vibration Dampener Materials.
- 6. Dynamic Method for Determination of Natural Frequency of Shock Mounts by Portsmouth Naval Shipyard Method.
- 7. Method for Measuring Vibration Damping Qualities.

J. Tear and Cutting Tests
- 2. Mare Island Alignment Assembly for DeMattia Flexing Machine.

K. Surface Indicator Tests
No additional tests.

L. Impact Tests (New Category)
- 1. Mare Island Rubber Laboratory Impact Test.
- 2. Cutting Impact Test.
- 3. Magnetic Impact Resistance Test.

ADHESION TEST METHODS

Strut Flexing Adhesion Test: In connection with an evaluation of pit filling material and of underwater coatings, the personnel of the Mare Island Rubber Laboratory developed an ingenious strut flexing adhesion test. The simulated strut is comprised of a steel bar 6′ long, 3½″ wide, and 1″ in thickness. The strut, covered with an experimental underwater coating, is shown in Figure 1. The strut bar is coated all over, except for the ends, with a .040″ thick layer of the coating to be tested. Prior to flexing, the coating is tested with a high voltage tester to insure freedom from pinholes and cracks. The strut jig is clamped at both ends in the flexing apparatus shown in Figure 2.

The jig is flexed first in one direction and then in the opposite direction by the action of bending stresses applied simultaneously to both ends of the jig. This is accomplished by clamping the ends of the jig to pivoted levers which are moved up and down at 1400 cycles per minute by the action of a crankshaft attached to an electric motor. The amplitude of the flexing, measured in the middle of the jig, is adjusted to 0.05″ or other suitable value. After flexing for a usual period of 1000 hours at room temperature, the coating is again tested with a high frequency tester to determine whether pinholes or cracks have developed in the coating as a result of the flexing.

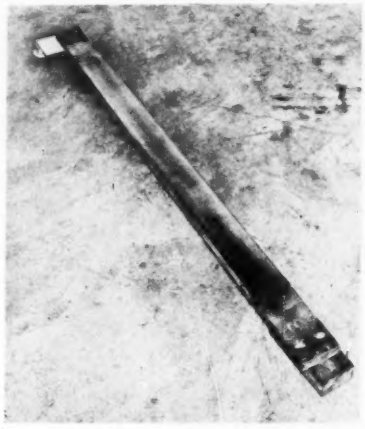


FIG. 1—Strut jig coated with experimental coating to be tested.

FIG. 2—Strut jig clamped in flexing machine ready for test.

FIG. 3—Propeller shaft assembly for torsional stress testing.

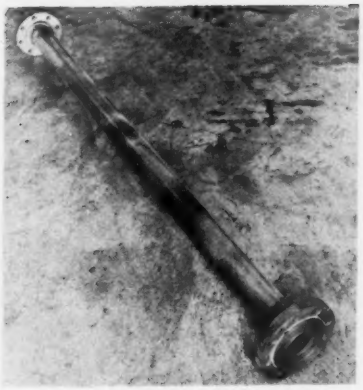


FIG. 4—The coated shaft jig ready for assembly.

Shaft Flexing Adhesion Test: Similar in purpose to the strut flexing test described above is a shaft flexing adhesion test likewise developed by personnel of the Rubber Laboratory at the Mare Island Naval Shipyard. The jig intended to simulate a propeller shaft consists of a 3½" O.D. pipe which is 6'8" long and has a wall thickness of ½". An 8-hole flange is solidly welded to each end of the pipe in order to secure the jig to the torsional stressing apparatus shown in Figure 3. The coated shaft jig, ready for assembly, is shown in Figure 4.

The shaft flanges of the jig are bolted to the torsion apparatus. The flange at one end of the jig is bolted securely to a fixed position standard. A twisting stress is applied to the jig shaft by an up-and-down movement of a lever attached to the flange at the opposite end of the jig. The movement of the lever is effected by an electric motor acting through speed reducing gears, a crankshaft and a connecting rod, as shown in Figure 3. By means of this apparatus, the shaft jig is twisted 0.56 degrees per foot alternately in a clockwise and a counter-clockwise direction at a rate of 22 cycles per minute. Periodically during the test and after completion of the desired flexing period, the jig is examined for pinholes or cracks by a high voltage tester.

It has been found by checking with service experience, that this severe twisting test carried out for a period of 1000 hours is an accelerated approximate equivalent of more than a year of actual service.

Hydraulic Adhesion Test for Hard and Soft Rubber Coated Shafts: The adhesion of hard rubber and soft rubber used in covering of main propulsion shafting of large ships cannot be determined directly without destroying the coating. It has been customary for many years to use a jig which is coated and cured simultaneously with the actual shafting. The adhesion thus obtained in the jig is representative of the degree of adhesion obtained in the shaft. The Rubber Laboratory of the Mare Island Naval Shipyard has redesigned the testing jigs and modified the technique used in evaluating the adhesion of rubber covering for large propeller shafts procured under Navy Department Specification

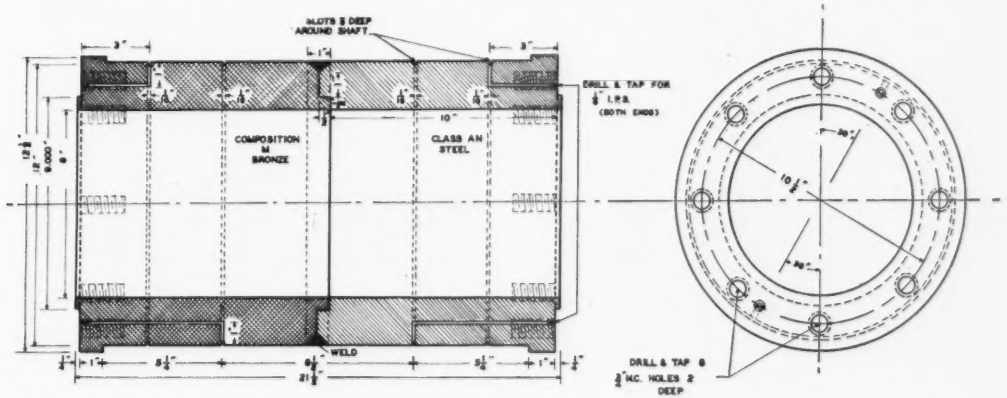


FIG. 5—Test jig for propeller shaft covering.

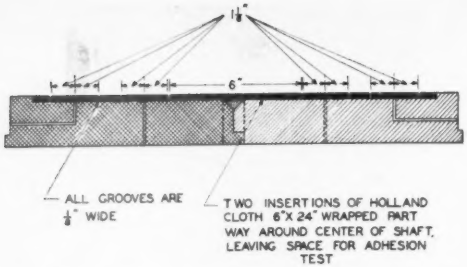

1½"
6"
ALL GROOVES ARE ⅛" WIDE
TWO INSERTIONS OF HOLLAND CLOTH 6"X 24" WRAPPED PART WAY AROUND CENTER OF SHAFT, LEAVING SPACE FOR ADHESION TEST

FIG. 6—Details of the preparation of rubber cover for hydraulic test.

33R6. It had been found difficult to maintain the jigs previously used in good operative condition, primarily due to the undercut "stopwater" grooves.

The modified jig is shown in Figures 5 and 6. Since it is necessary to determine the adhesion to bronze as well as to steel, half of the new type of jig in a longitudinal direction is steel and the other half is bronze. The jig is similar to a section of the hollow propeller shaft. It will be noted that there are two circumferential test grooves in the steel portion of the jig and two circumferential test grooves in the bronze portion. These grooves connect to drilled and tapped pipe connections in the ends of the jig which in turn are connected to a hydraulic pump. The space between the inner circumferential test grooves on the steel and the bronze is used to determine the adhesion of the soft rubber outer layer to the hard rubber inner layer and provides sufficient material of the soft layer and the hard layer rubber required for the other physical tests. A clean cotton cord is laid in each circumferential test groove prior to the rubber covering and, in addition, the groove is covered by a centered strip of holland fabric ¼" wide.

The rubber covered jig is then cured in conjunction with the full-sized rubber shaft, by placing the jig in series with the steam supply used in vulcanizing the rubber shaft covering. Hydraulic pressure is applied to each of the two circumferential groove connections in the steel portion and to the two similar connections in the bronze portion. The pressure required to cause failure is recorded, thus giving duplicate adhesion values for adhesion to bronze and to steel. The manner of cutting the rubber prior to conducting tests is shown in Figure 6. The easier maintenance of the new jig will be particularly appreciated by those having experienced difficulty in maintaining the undercut "stopwater" grooves after each inspection test.

Orthogonal Strip Adhesion Test: Mr. Chatten and Mr. Taylor of the Material Laboratory, New York Naval Shipyard, have developed an exceptionally accurate adhesion tester called the Orthogonal Strip Adhesion Tester. Figures 7 and 8 show the tester mounted in testing position on a Scott Tensile Testing Machine.

It will be noted in Figure 8 that the apparatus is attached to the Scott machine by bolting the U-shaped base (1), to the driving jaw (2) of the Scott machine. The uprights (3) of the base are drilled to form bearings for a square thread power shaft (4). The shaft threads into a rider (5) and is keyed to (6) and a crank (7). The arrangement is such that manual rotation of the crank imparts horizontal motion to the rider. The rider slides

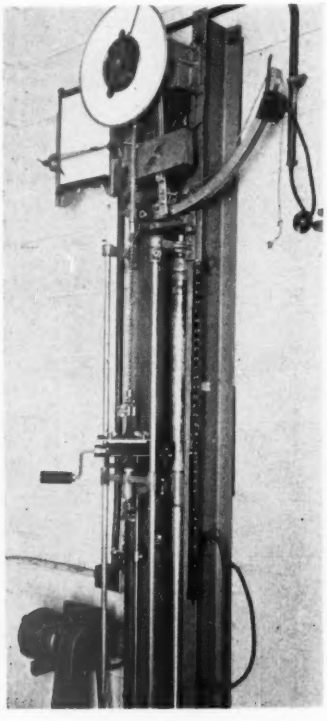


FIG. 7 — Over-all view of orthogonal strip adhesion test mounted in Scott tensile machine.

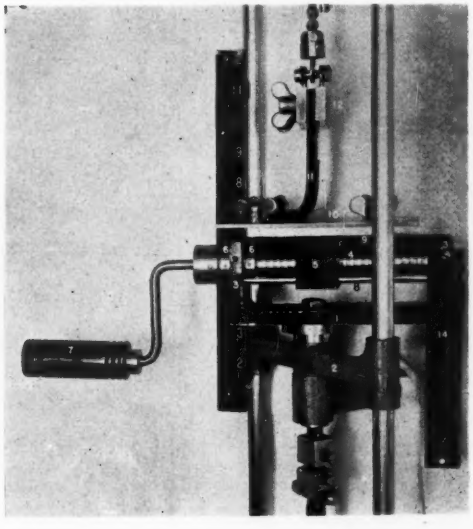


FIG. 8—Close-up of orthogonal strip adhesion device.

along two pins (8) (only one of which can be seen in the photograph), which prevent the rider from rotating. An adapter plate (9) having four brass studs is secured to the rider and a specimen plate (10), with the elastomeric strip bonded thereto, is attached to the adapter plate (9) by means of four wing nuts. A portion of the elastomeric strips (11) is detached from the specimen plate and gripped by a friction clamp (12). A steel chain (13) which holds the clamp, is suspended from the load measuring head of the Scott tensile machine. The brace (14) is removed from its usual position, attached to the uprights (3), to show more clearly the construction of the adhesion tester.

The tensile machine is operated at a jaw separation speed of 1″ per minute and is adjusted to an orthographic plot of adhesive strength. Downward motion of the driving jaw causes the elastomeric material to be stripped away from the steel plate. Concurrent with the stripping operation, the handle of the orthogonal tester is turned manually to advance the adhesion plate at a rate sufficient to continually maintain a 90° angle of detachment of the elastomer, as judged by the parallel position of the chain supporting the friction clamp and one of the tensile machine support rods. The orthogonal tester has been found to yield exceptionally reproducible results.

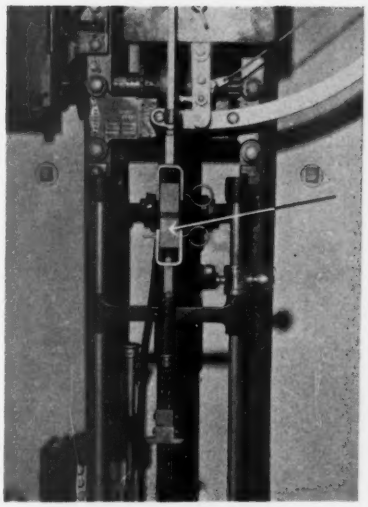


FIG. 9—Puget Sound tension adhesion tester for rubber calking materials.

Puget Sound Tension Adhesion Test: The Puget Sound Naval Shipyard Laboratory method of testing the adhesion in tension of rubber to wood surfaces has the advantage of not requiring a Universal testing machine which is not always available in laboratories equipped for testing rubber. It has the additional advantage that the test specimens are easier to prepare without loss of rubber calking material due to seepage between the wooden block surfaces and holder.

The method employs a Scott tester and a rectangular test specimen which is simple to prepare and easy to fill with a rubber calking material. The test specimen consists of two rectangular wooden blocks 1″ x 1″ x 1½″ each. The adhesion surface is 1″ square on each block. The upper and lower wooden blocks are attached respectively to U-shaped clevises by means of pins pushed through 9/64″ holes drilled through the wooden blocks. The arrangement is clearly shown in Figure 9, the arrow pointing to the location of the test specimen held in place by the attachments on the Scott tester. This adhesion test has been found of particular service in testing calking compounds of the liquid polysulfide type, but will be found suitable for many similar applications.

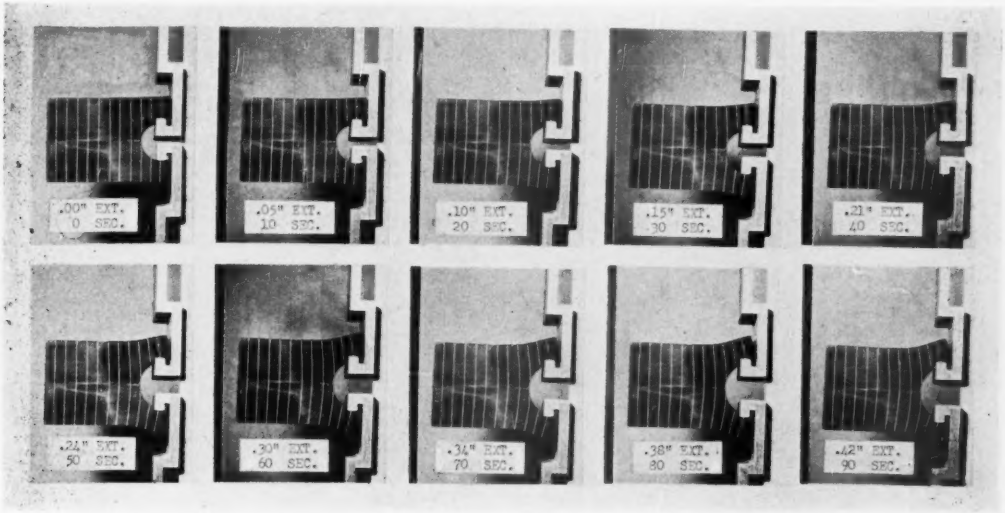


FIG. 10—Graphic demonstration of stress during cleavage adhesion tests showing 60-Shore hardness specimen.

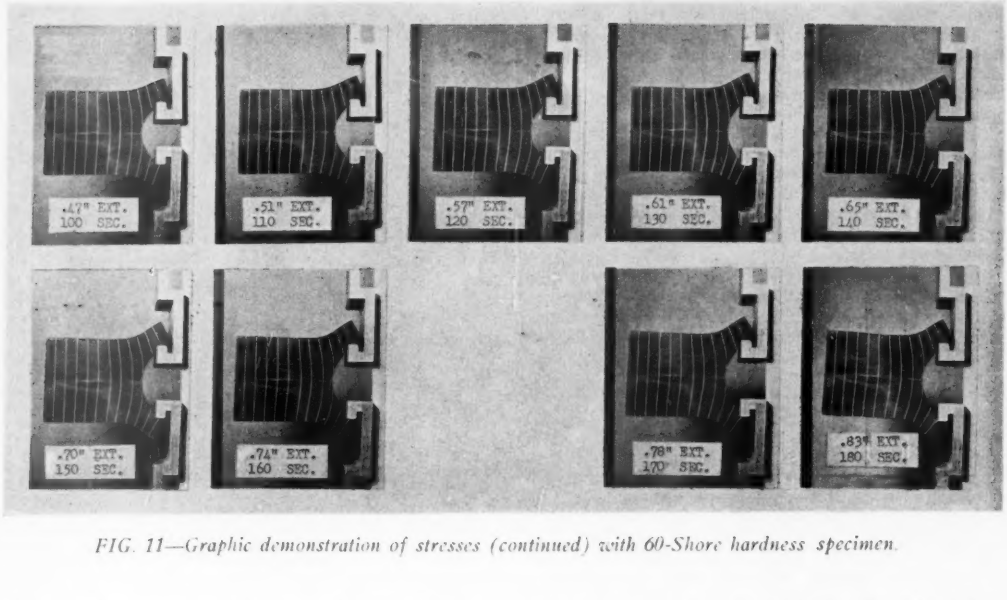


FIG. 11—Graphic demonstration of stresses (continued) with 60-Shore hardness specimen.

Graphic Demonstration of Stresses during Cleavage Adhesion Tests: Considerable discussion as to the relative value of the cleavage and the tension adhesion tests made it desirable to attempt to determine graphically the distribution of stresses during the course of a cleavage adhesion test. In order to accomplish this, the writer suggested a graphic demonstration of the forces involved.

A 60-Shore durometer neoprene stock and an 85-Shore durometer neoprene stock were compounded by the Mare Island Rubber Laboratory. Both of these stocks were molded in the exact shape of usual metal or wooden cleavage adhesion test specimens and were then cemented and allowed to remain for two weeks. At the end of this period, the assembled test specimen was marked on one of the side faces with a series of lines drawn with white ink. The lines were drawn normal to the edge of the cemented surfaces and were spaced ¼" apart. The specimens were then placed in the metal grips specified for the cleavage adhesion test and were attached to a Tinius Olsen Universal tester. The grips were separated at the speed of ¼" per minute. Succes-

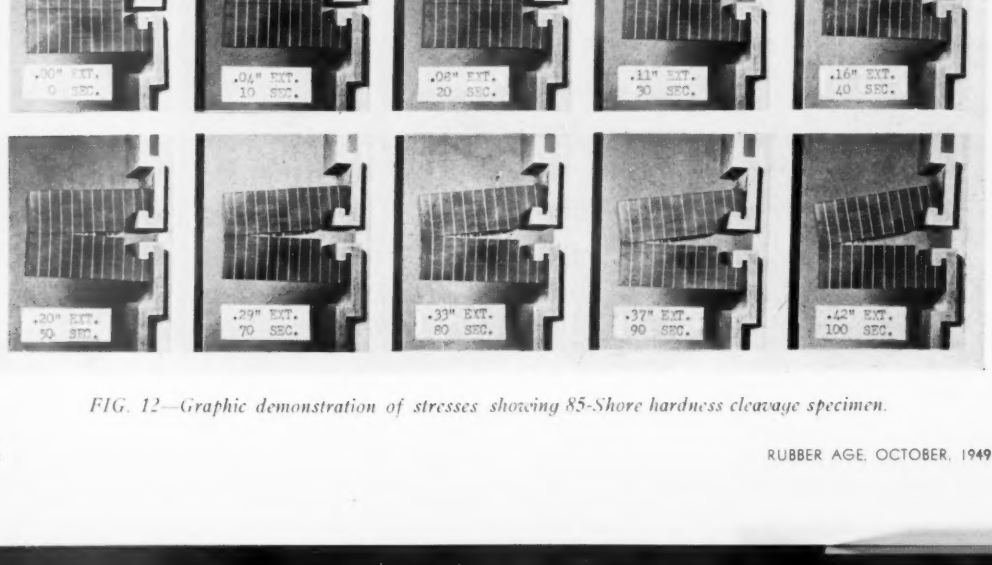


FIG. 12—Graphic demonstration of stresses showing 85-Shore hardness cleavage specimen.

sive photographs were taken by means of flash bulbs at 10 second intervals. Each time a photograph was taken, the force to produce the extension at that particular time was recorded.

The nature of the stresses is clearly indicated in the cleavage specimens of the 60-Shore hardness rubber compound in the photographs shown in Figures 10 and 11, while the distribution of forces of the hard rubber (85-Shore) specimen are indicated in Figure 12. As will be seen from the series of photographs in Figures 11 and 12, the distortion of the specimen at the cemented faces was small. However, there was a slight compression as indicated by the decrease in space between the wider line at the separating end of the specimen.

In the case of the 85-Shore durometer rubber block, which more closely resembles the consistency of the usual wooden or metal cleavage specimen, there is no appreciable distortion.

Judging from the results obtained in this investigation, the separation in the cleavage specimen is a line separation parallel to the pulling jaws. From this, it may be concluded that the cleavage adhesion test evaluates cements in tension only and therefore does not seem to offer any advantages over the straight adhesion tension tests. This convenient system of marking parallel white lines on a distensible medium, whose distortion and lines of force pattern it is desired to determine, would seem to offer numerous related applications.

Vibration and Sealant Properties Test: In connection with the development of a sealing cement for oil tank riveted seams, it was necessary to subject these riveted seams to deflection stresses which would simulate the working and heaving of bulkhead plates when the ship is underway in heavy seas. At first, a mechanical method of subjecting plates to deflection was utilized in which a cam mechanism would deflect the plate. Personnel of the Engineering Experiment Station, Annapolis, Maryland, developed an exceedingly ingenious mechanism whereby the riveted plate to be tested was installed in a steel tank 12" square and 6" deep. This tank is shown in Figure 13. By alternately increasing and decreasing the internal pressure in the tank by the motor-operated

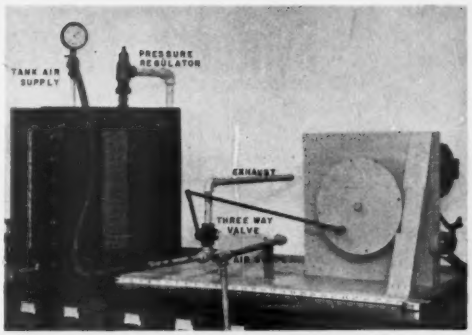


FIG. 13—Assembly of the vibration and sealant properties testing unit showing test box, panels and cycling mechanism.

3-way valve, the riveted steel plates forming the front and back of the tank are subjected to a cyclic "panting" action which closely simulates working of a bulkhead in a seaway.

The test is conducted by installing the riveted plates, coated respectively with the standard cement and the cement to be tested, in the steel boxtank. (Only one side of the box is shown in the illustration). The box is then filled with diesel fuel oil or other liquid against which the cement is to be tested and the cycling operation at the rate of three cycles per minute is continued for the desired period of time.

It is interesting to note that previously the mechanical deflection method required a five horsepower motor, whereas the above described equipment requires only a one-twentieth horsepower motor to operate the three-way valve. The motivating power is air, at 25 pounds per square inch.

(To Be Continued)

Rubber Manufacturing Activities in Various Countries

FROM time to time the U. S. Department of Commerce furnishes data on the rubber manufacturing activities of various foreign countries. Some recent reports on some of these countries follow:

Brazil: Tire manufacturers have set their 1949 production goal at 1,200,000 tires and 900,000 inner tubes. Production in January was 81,632 tires of all types and 58,504 tubes, all types; in February it was 86,602 tires and 59,418 tubes. These are the latest available figures. The output in 1948 was 994,609 tires and 744,667 tubes. In 1947 it was 897,720 tires and 699,053 tubes. These totals represent tires and tubes manufactured for trucks and busses, passenger cars, tractors, road-building machines, and motorcycles, the largest numbers being for trucks, busses and passenger cars. The output for bicycles in 1948 was 227,910 tires and 169,695 tubes, compared with the 1947 production of 322,254 tires and 331,186 tubes.

The demand for various sizes of trucks, tractors, and the like is said to be still unsatisfied. Although it is about equal to supply for passenger car tires, continuing increases in automobile registrations point to a progressively increasing internal market, at least as long as present business levels are maintained.

Foreign tire companies have continued their interest in manufacturing facilities in Brazil, and a French company was granted permission in 1948 to erect a plant in Sao Paulo. At the end of 1948, existing tire companies were working on a three-shift basis, and in any plans for additional capacity an existing power shortage and prospects for meeting it had to be considered.

Hong Kong: Fifty-five factories and workshops are registered in Hong Kong as producers of rubber shoes and rubber wares. Labor employed in 1948 totaled 4,427. The unregistered workshops are producing mostly toys, soles, and inner tubes for bicycles. Difficulties of qualifying for Empire Preference and strict import-quota restrictions in the United Kingdom, and cancelation of orders by the Philippines all tended to keep the industry in a state of uncertainty. Several substantial orders for rubber shoes helped establish the business on a firmer footing toward the end of 1948, but it will need considerably more assurance of overseas markets if it is to be reasonably successful in 1949.

Synthetic Fibers in Industrial Uses

By W. WYCLIFFE OWEN

Rayon Division, E. I. du Pont de Nemours & Co., Wilmington 98, Del.

THOSE of you who are in the rubber industry have a wonderful record of achievement over a period of many years. Since 1919 your consumption of rubber has increased fourfold, having doubled during the past 10 years. This latter period also was notable for your amazing development, production and utilization of synthetic rubber on a large scale.

Those of us who have been associated with the synthetic fiber industry feel that we, too, have something to "crow" about. Since manufacture of the first man-made fiber, viscose rayon, then called "artificial silk," on a commercial scale in this country was initiated in 1910, the annual production of rayon has increased almost without interruption to a total of 1,124,300,000 pounds in 1948, as indicated in Figure 1. This represents a 136 fold increase since 1919 and over a threefold increase within the past 10 years.

With the passage of time, other fibers, each with distinctively different properties, were introduced to challenge viscose rayon—acetate rayon in 1919, nitrocellulose rayon in 1920, and cuprammonium ravon in 1926. The basic raw material of each of these fibers is cellulose. Subsequently the azlons, derived from protein bases such as casein, soya beans, zein, and peanuts, began to appear. These, incidentally, are produced only in the form of staple fiber.

Note: This article is based on a talk given by the author at the Symposium on Industrial Fabrics held by the Akron Rubber Group in Akron, Ohio, February 18, 1949.

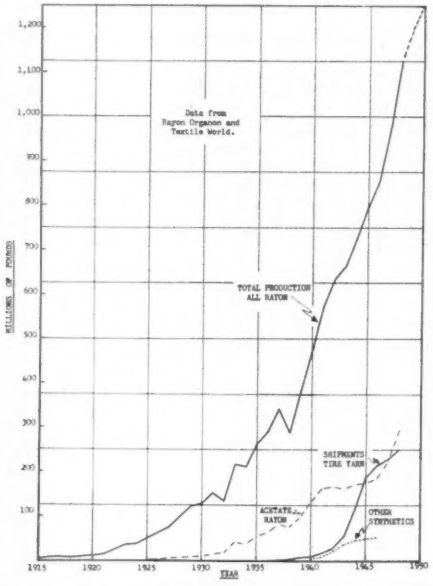


FIG. 1—Production of Rayon.

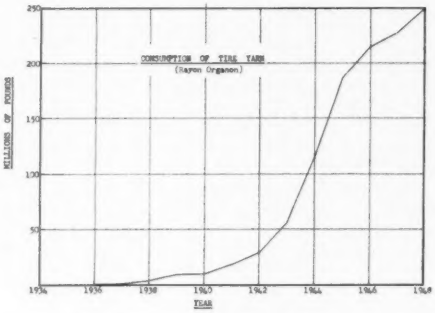


FIG. 2—Consumption of Rayon.

In 1938, nylon was announced by the DuPont Company as the first truly synthetic fiber. This was followed in a seemingly rapid order by several other new fibers, such as Vinyon and Vinyon N of vinyl resins; Saran, Velon, Viskord from vinylidene chloride, and more recently "Orlon" acrylic fiber. Along with these, we should mention glass fiber and the production of very fine steel wire. Since both of these are of mineral origin, we prefer not to include them in this discussion. Estimates of consumption of synthetic fibers other than rayon indicate a very rapid growth since 1940. Most of these are not suitable as reinforcing agents for rubber goods because of physical form, low strength, high elongation, excessive creep or sensitivity to heat.

Although not chemically a new fiber, high tenacity viscose rayon, first produced commercially in 1936, has proved to be of major importance in the rubber industry. From a modest quarter of a million pounds by one producer in 1936, the consumption of this type of yarn skyrocketed to 250,000,000 pounds in 1948 with five producers as shown by Figure 2. At present, consumption is limited by the production capacity. Over this period there have been continued technological improvements so that tire cord twisted from current production is about 50% stronger than from that originally produced.

Reasons for Wide Acceptance

Let us analyze the factors responsible for industry wide acceptance and utilization of this fiber. Less than 10 years ago the published statement of a gentleman widely known in the rubber industry was, "It is my considered opinion that the usefulness of rayon in the tire industry is limited." Stated simply and briefly, the dynamic increase in consumption of high tenacity rayon by the rubber industry is due to its ability to do a better job or to perform equally as well at lower cost or, in many instances, to do a better job at lower cost.

REPRESENTATIVE PROPERTIES OF SYNTHETIC FIBERS

	High Tenacity Viscose Rayon	Type 300 Nylon	Saponified Acetate	"Orlon"	Vinyl Resin	Vinylidene Chloride	Cellulose Acetate
Tenacity—Cond., g.p.d.	3.0-3.8	6.5-7.0	5.5-7.0	4.0-4.8	2.0-4.5	1.0-3.0	1.1-1.7
—Wet, g.p.d.	1.9-2.3	6.0-6.5	4.0-6.0	3.6-4.4	2.0-4.5	1.0-3.0	0.8-1.1
Elongation—Cond., %	8-20	15-17	5.5-6.5	16-21	8-40	15-30	20-30
—Wet, %	17-25	16-18	5.0-6.0	15-20	8-40	15-30	28-38
Modulus	High	Medium	Very High	Medium	Low to Medium	Very Low	Medium
Moisture Regain at 60% R.H., %	12	3.4	10-11	0.9	0-0.5	0	5.4
Specific Gravity	1.52	1.14	1.52	1.18	1.22-1.36	1.6-1.75	1.33
Desirable Properties	High Strength per Unit Weight	Extra High Strength per Unit Weight	Extra High Strength per Unit Weight	Very High Strength per Unit Weight	High Strength per Unit Weight		
	High Modulus		Very High Modulus				
	Good Resistance to Fatigue	Very Good Resistance to Fatigue	Very Low Elongation				
	Low Cost						
Undesirable Properties	Sensitive to Moisture	High Elongation and Creep	Poor Resistance to Fatigue	High Elongation	Sensitive to Heat	Sensitive to Heat	Sensitive to Heat
	Requires Adhesive	Requires Adhesive	Requires Adhesive	Sensitive to Heat		Low Strength	Low Strength
		High Cost	High Cost	Requires Adhesive		High Elongation	Very High Elongation
						Very Low Modulus	

As is well known, most high tenacity rayon is utilized in the production of tires. In reviewing the properties of rayon tire cord and its relative advantages for this specific application, we find that they are high strength per unit weight in either conditioned or oven dry state and at elevated temperatures, low gauge per unit of strength, high yardage per pound, uniform size and physical properties, and a relatively stable price level. The advantages to tire manufacturers are a thinner tire carcass, with consequent reduction in quantity of rubber and in operating temperature, which are reflected in greater safety performance and in longer tread life; lighter weight carcass; higher strength carcass; greater resistance to impact bruise; greater strength at high temperature; more retreads; greater dependability; and independence of fluctuating yarn market which in turn permits operation with lower yarn or fiber inventory.

Because of its special properties, rayon cord is being used for reinforcing the majority of V-belts produced. Only rayon and wire have been found suitable for small cross section automotive belts such as required for Kaiser, Frazier and the new Ford cars. Greater ease of belt manufacture together with lower cost have been to rayon's advantage in this application. In general, the use of rayon in V-belts has increased flex life 2 to 5 times and effected a marked reduction in growth during service.

Practically every type of rubber hose is being manufactured with either woven, knitted or braided rayon yarn or cord as reinforcement. Its high strength per unit weight permits savings in rubber and fabrication of lighter weight hose or higher strength hose than would be practical with other fibers. For example, a single ply hose might have the bursting strength of 2-ply hose reinforced with some other types of yarn. Hydraulic hose with appreciably higher bursting strength, that heretofore was impossible without resorting to wire braid, now is being produced.

A wide range of belt and hose ducks varying from 8½ oz. to 36 oz. per square yard with strengths up to 900 lbs. per inch have been developed for various applications by the rubber industry. The life of wrapped steam hose has been increased 2 to 3 times for similar operating conditions through the use of this type of fabric. Also, hose for operating at higher steam pressure than previously considered possible now is being manufactured. The high strength and superior flexibility of these fabrics have proved to be desirable characteristics for the fabrication of diaphragms for various applications.

Several conveyor belts have been built from this high strength fabric and are in service. Their performance to date has been entirely satisfactory. Thinner, more flexible belts or higher strength belts of a given thickness are possible through its use. Reports are that a large proportion of conveyor belts installed in England during recent years are reinforced with rayon. It will be interesting to see what fiber is used for reinforcement if the proposed 130-mile conveyor belt from Lake Erie to the Ohio River ever becomes a reality. In addition, there appears to be an application of these high strength fabrics in power transmission belts for operation under difficult service conditions.

We have been discussing high tenacity rayon. In one application, that of bicycle tires, regular textile type rayon has proved to be outstanding in performance.

Tests on tires of this type consistently indicated over 50% longer life than for those previously manufactured. This type of yarn also appears to be of interest as pick thread in tire cord fabric.

For a limited time, Fiber G, a viscose yarn having about 5 g.p.d. tenacity with an elongation at break of about 7%, was marketed in commercial quantities. Its high strength and low elongation made it ideal for use in V-belts, but it did not prove to have the necessary resistance to flexing required for general industrial application.

While cellulose acetate yarn itself is too susceptible to deformation at elevated temperatures for use in rubber goods, stretching it to a high degree followed by saponification while maintaining the yarn under tension produces a regenerated cellulose product having 6 to 7 g.p.d. tenacity and about 6% elongation. At present Fortisan is the only fiber of this type produced in commercial quantities. It also has poor flex resistance so that its application in rubber goods is limited to those uses requiring high strength but involving little flexing. Its cost also limits its utilization.

Advantages of Nylon in Industry

As is known, during the war nylon was used in military plane tires because of its high strength per unit weight and ability to withstand shock load upon landing. These properties, together with its high resistance to fatigue, made it a candidate for use in postwar tires. Increasing quantities now are being utilized in premium passenger tires and in truck tires for selected or critical service.

Nylon is being used in certain types of V-belts because of its ability to withstand sudden application of heavy loads. Its low moisture regain makes it suitable for installations subjected to adverse weather conditions such as on farm machinery and drilling rigs.

By using nylon filling in conveyor belt fabrics, especially for those belts reinforced longitudinally with heavy cords, lateral strength can be built into belts without a major increase in thickness that would reduce flexibility. Fabrics weighing 1.4 to 12 ounces are used in diaphragms, curing tapes, and de-icing equipment and wing linings for airplanes.

Yarns spun from staple of these fibers have been considered as reinforcing agents. Passenger tires which have been made from spun rayon cord were equal to or possibly better than those made from cotton cord in service life, but, at present, economics preclude spun rayon competition with cotton or continuous filament rayon in this use. It is quite possible that with changes in the economic situation, one or more of the staple fibers ultimately may achieve special usage as reinforcing material in rubber.

At the present time the new "Orlon" development is not directed at the rubber industry. In tires, its inflation growth is borderline and growth at high temperature is unsatisfactory. Eventually there may be some applications in mechanical goods. There is always the possibility, of course, that future research may find ways of overcoming present disadvantages.

Summary of Major Properties

Let us now consider a summary of the major properties of various synthetic fibers together with their desirable and undesirable characteristics tabulated in the accompanying table. While rayon offers high strength per unit weight, high fatigue resistance and low cost per unit of utilizable strength, it suffers a loss in strength and an increase in elongation as its moisture content increases and must be treated with an adhesive so that rubber will bond to it.

The extra high strength and very high fatigue resistance of nylon are especially attractive, but its initially high elongation combined with creep under sustained loading prevent full capitalization of its potential strength. It is more costly and requires an adhesive for bonding with rubber. Heat sensitivity of "Orlon" acrylic fiber, Vinyon, vinylidene chloride, and acetate yarns alone precludes their use in rubber goods, except possibly for some special applications. Other characteristics, such as low strength, high elongation, shrinkage at elevated temperature, creep, or cost are to the disadvantage of the various fibers.

Gazing into the crystal ball, what can be foreseen with respect to synthetic fibers? Over the years steady progress has been made in design and quality of various rubber products as new methods of compounding and fabrication have been developed. Likewise, there have been continual improvements in strength and fatigue resistance of rayon which undoubtedly will be projected into the future as research discloses more about the fine structure of regenerated cellulose and how to build molecular chains within the fiber into the configuration desired. Ultimately through improvements in inherent yarn characteristics combined with changes in conventional methods of tire design, it is believed that utilization of single end rayon cords is not at all impossible.

With the tremendous research program on synthetic fibers that is in progress throughout this nation, as well as the world in general, there undoubtedly will be new fibers to compete with those currently available. The day of a universal fiber for the wide ramifications of the rubber industry is past. As old fibers are improved and new fibers developed, they will be used for specific applications which will be determined by the balance between economics and characteristics of the individual fibers.

Precautions for Electricians

THE investigation into a recent fatality at a tire plant in which an experienced electrician received a fatal shock when he accidentally came in contact with a live motor lead carrying 440 volts brought out the following facts:

1. The electrician had failed to throw the master switch for the circuit into the "off" position before starting to work on the motor.

2. He assumed that the circuit was "dead" because the motor had been shut off at the push button control station. He did not use a voltage tester on the circuit.

3. A "jumper" was in use across one of the contacts in the magnetic reversing starter for the motor. As a result, one of the three leads to the motor was continually "hot."

These three deviations from good operating practices were enough to add up to a fatality. Better check your electricians to make certain they know and are practicing safe operating procedures in working on electrical equipment.

Rubber Safety News Letter

Protection of Motors From Carbon Black and Plasticizers

By B. J. DALTON

Industrial Engineering Divisions, Apparatus Department, General Electric Co., Schenectady, N. Y.

MAINTENANCE and repair costs, as well as costly down time, can be reduced by adequately protecting motor windings from two arch enemies—carbon black and vinyl plasticizers. The atmosphere surrounding Banbury mixers and other mixing machines is usually filled with the various dusty or volatile compounds being mixed. Any of the air-borne ingredients are likely to clog the ventilating passages of open motors and result in overheating. Serious as this may be, however, it does not compare with the hazard of allowing large quantities of carbon black or the various vinyl plasticizers to collect on and around the motor windings.

Carbon black and the vinyl plasticizers affect insulation quite differently. Carbon black, which is highly conducting from an electrical standpoint, penetrates small cracks in insulating materials and provides hair-like creepage paths for current to flow. These paths further carbonize the insulating surfaces and grow until failure occurs. Vinyl plasticizers, on the other hand, actually soften, blister or dissolve insulating varnishes and therefore reduce the insulating properties of the varnish. Adequate motor enclosures provide the greatest assurance against trouble from both of these causes.

Motor Failures Due to Carbon Black

Large quantities of carbon black have been used in rubber compounding for years, and apparently without undue motor difficulties. However, with the growth of the synthetic rubber industry in the last five years or so, there have been wide-spread motor insulation breakdowns where large quantities of highly conducting carbon black dust has settled on motor windings. These breakdowns have been particularly serious in tire plants.

Since all carbon black used in rubber compounding is conducting from an electrical standpoint, one may fairly question why there are more troubles today than there were a few years ago, because admittedly these machines have always been dirty. Although the answer is not easy nor entirely straightforward, there are several facts which should be considered.

First of all, it is obvious that conditions are not the same in all locations. Even in a single mill room the amount of carbon black and the conductivity of the heterogeneous dust collection in and around various motors will cover a wide range. This has been demonstrated by simple resistance measurements of dust taken from a number of motors. The amount and conductivity of the dust in a motor will modify the problem, independent of other considerations.

In view of the relatively recent upsurge of motor insulation difficulties, a comparison is sometimes made between old and new motors with the inference that newer motors have poorer insulation than the older machines. This is not true, because insulating materials, like most other manufactured goods, are being continually improved by corps of specialists to maintain their position in our competitive economy. Numerous advances in insulating materials and methods are being incorporated in today's motors.

New Carbon Blacks

Rubber people know that much greater quantities of carbon black are being used today than were used prior to World War II, and that by far the largest growth has been in the furnace type blacks. This growth, which is shown graphically by Fig. 1, is alone a significant change, but even more significant is the fact that the new furnace blacks are a greater menace to motors than channel blacks because of their much greater electrical conductivity.

It is difficult to make a general statement which will accurately and adequately compare the electrical conductivity of the numerous types of carbon black because conductivity varies widely not only between different types of carbon black and between different manufacturers' blacks, but also with temperature and pressure changes. A comparison on a relative basis, however, with pre-war channel blacks (Types MPC and HPC) used as a standard of comparison, will illustrate the difference between pre-war carbon blacks and post-war carbon blacks.

The most commonly used channel black today (Type EPC) is about one-quarter to one-half as conducting as pre-war blacks. On the other hand, the most commonly used furnace blacks today (Types SRF and HMF) are about 8 to 35 times as conducting as pre-war blacks. The resistance per cubic centimeter of type HMF carbon black is as low as 1.2 ohms under pressure of 60 lbs. per square inch. Certainly one cannot deny that the potential hazard due to the huge quantities of highly conducting carbon black present in the air has become increasingly serious.

Special insulation treatment will make the motor wind-

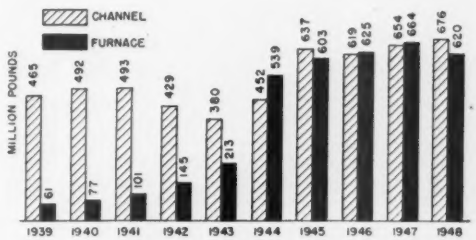


FIG. 1—Carbon black production and growth of furnace black for a 10-year period (in millions of pounds).

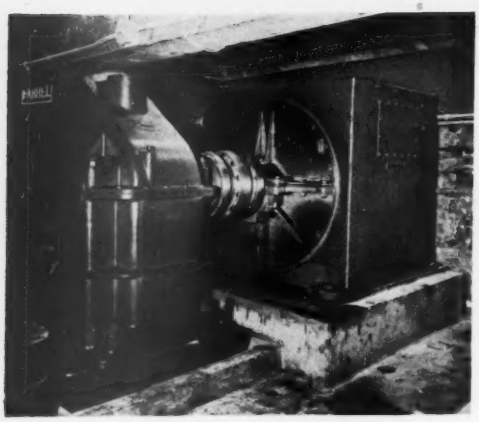


FIG. 2—Enclosed, separately ventilated two-speed induction motor for driving Banbury mixer. Rated 600/300 h.p. Air enters through bottom and is discharged from the top.

ings somewhat less vulnerable. But this is only a compromise answer, for even the most carefully treated coils may develop very small cracks in the varnish when handled or during normal operation due to magnetic forces on the coils or the expansion and contraction associated with heating and cooling. And when carbon black enters the cracks, the day of breakdown is imminent. Besides this, excessive application of varnish results in brittle coils and prevents removal of single coils without damaging others.

Plasticizers

The plasticizers used in most vinyl chloride materials become volatile at the high temperatures used in compounding and are therefore present in the room air which is used to ventilate the motors. A large amount of the plasticizer in the ventilating air condenses on the windings of open motors and may result in damage to the insulation. Operating difficulties which have been substantiated by laboratory tests prove that certain of these materials, such as tributoxy ethyl phosphate, dibutyl phthalate, tricresyl phosphate, dioctyl phthalate and dioctyl sebacate, soften, blister or dissolve many commonly used insulating varnishes.

Since all varnishes are not affected to the same degree by all plasticizers, it is possible that in certain cases motors can be treated in the process of manufacture with special insulating varnishes which are not soluble in the specific plasticizer involved. Often, however, the varnishes which have the highest resistance to plasticizers do not have entirely desirable electrical characteristics.

In the rapidly changing plastics field, it may not be wise to provide special insulation to withstand certain plasticizers, because it is possible that the materials used in the future may damage even the special insulation.

Motor Enclosures

Although an enclosed motor is initially higher in price than a comparable open motor, it is inexpensive insurance against shutdown of a production line. Furthermore, savings in maintenance expense alone may pay for the additional cost in a short time. There may be instances where enclosures are not economically justifiable; however, they should be seriously considered for all applications involving solvent type plasticizers or large quantities of carbon black. A number of enclosure types are available to suit the particular installation conditions.

Totally Enclosed Pipe Ventilated: The least expensive enclosed motor neglecting the cost of a ventilating system is the totally enclosed pipe ventilated machine of the separately ventilated type. Cooling air for this type of motor is obtained from an outside source and forced through the motor. It is usually discharged into the room. The motor must be supplied with 10 to 12.5 C.F.M. of air for each horsepower of motor rating.

In new plants or in plants in which air conditioning systems are already installed, forced ventilation may be readily and inexpensively installed. On the other hand in plants where no air handling systems are installed the supply of an adequate quantity of clean air may be a considerable problem.

If it is necessary to install filters, a blower and a sys-

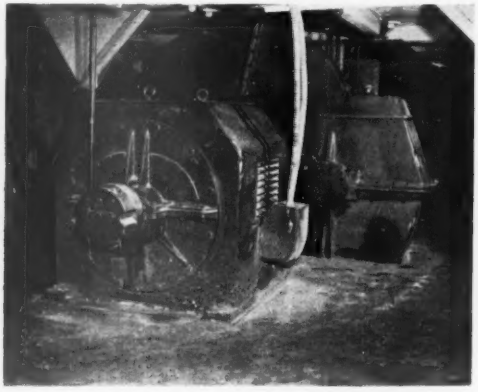


FIG. 3—Enclosed, separately ventilated synchronous motor for driving open roll mill. Rated 250 h.p. Air enters through bottom and is discharged from the sides.

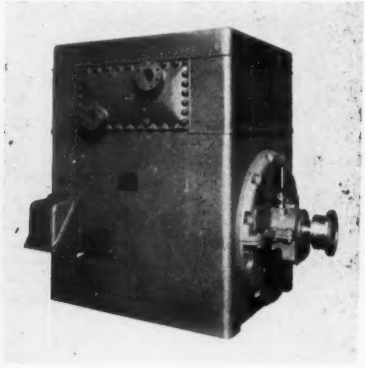


FIG. 4—Typical construction of induction or synchronous motors with air-to-water heat exchanger. Note cooling water connections.

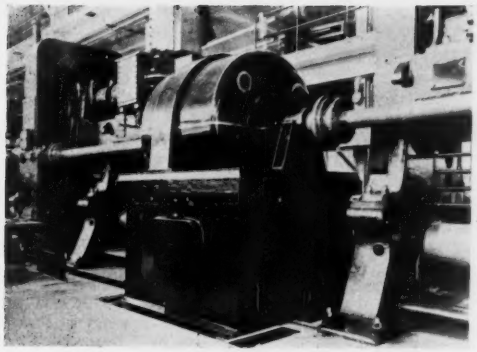


FIG. 5—Enclosed synchronous motor with air-to-water heat exchanger for driving Banbury mixers and mills. Rated 1250 h.p. Installed in 1938.

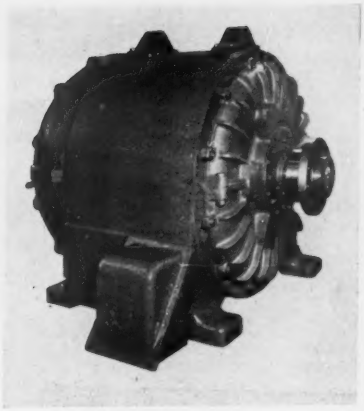


FIG. 6—Totally enclosed, fan cooled, two-speed squirrel cage induction motor. Rated 300/150 h.p.

tem of duct work for a particular motor, the expense of this installation may be so great as to make other types of enclosures more economical. Furthermore, the maintenance of filters and the other components of such an air circulating system may discourage the use of this type of enclosure. Figs. 2 and 3 show enclosed, separately ventilated motor installations.

Totally enclosed pipe ventilated motors of the self-ventilated type use the fan mounted on the motor shaft to draw ventilating air through a ventilating pipe. This type of motor can be readily installed in plants where clean air can be easily drawn in from the outside. The pipe run, however, should not exceed 25 feet. Pipe ventilated construction is not generally available in the smaller ratings.

Totally Enclosed Unit Cooled: In cases where the processing machine is water-cooled, a totally enclosed unit-cooled motor with an air-to-water heat exchanger is very desirable because of the simplicity of installation and the complete isolation of the motor windings from any outside air. Since a large quantity of water is required for cooling of the process itself, part of the process cooling water can be circulated through the motor. The amount of motor heat to be dissipated will raise the motor cooling water temperature only a few degrees and it is therefore still usable for other processes.

The surface coolers used in this type of motor are the standard fin type. The amount of cooling water required for the surface cooler will vary somewhat, depending on individual motor and cooler designs, as well as on water temperature. For estimating purposes, however, a figure of .05 gallons per minute per horsepower of motor rating can be used. This is based on a cooling water temperature of 80° F. Coolers are normally built for supply water pressure of 50 lbs. per square inch, but can be supplied for pressure up to 125 lbs. per sq. inch.

Fig. 4 is representative of the construction of these machines and shows the surface cooler mounted above the motor. With this construction the mounting dimensions and the distance from the motor base to the shaft centerline are about the same as for open motors. Fig. 5 shows a surface cooled motor installed in 1938. Advantages of this type construction include the following: The motor heat is not released in the surrounding air (this should be particularly desirable in the summer), the enclosure around the motor reduces motor noise, and no air stream is exhausted into the room.

Totally Enclosed Fan Cooled: Totally enclosed, fan cooled induction motors provide complete protection for the windings and have the advantages of requiring no special cooling system and of being the most simple enclosed motor to install. These machines are somewhat larger than comparable open motors because of the need for larger surfaces to dissipate the losses. Fig. 6 illustrates a motor of this type. This construction is not generally available for synchronous motors. Because this type of motor is usually rated without a service factor, whereas open motors include a service factor of 15 per cent, they are therefore not quite comparable with open machines of the same nominal horsepower rating because they lack continuous overload capacity.

Fig. 7 is included here to show an approximate price comparison for various motor enclosures.

Many users have the problem of adequately protecting existing motors. With motors originally designed as open machines, it is necessary for the user to fabricate special sheet metal fittings and ducts so that the motor can be adequately isolated from the room air. Such machines can be cooled either by a separate ventilating air system or by a recirculating air system with surface coolers.

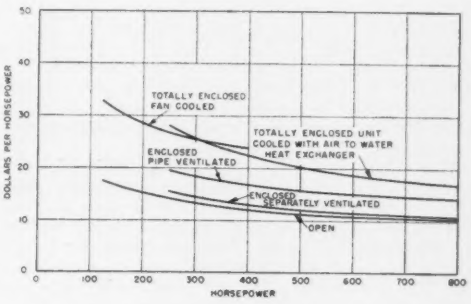


FIG. 7—Approximate comparison of motor prices with different enclosures. All prices are based on squirrel cage induction motors, 720 r.p.m., with usual rubber mill torques.

Manhattan Rubber Installs World's Largest Conveyor Belt Press

THE world's largest precision hydraulic press for vulcanizing conveyor belts, recently custom-built by the Baldwin Locomotive Works for the Manhattan Rubber Division of Raybestos-Manhattan, Inc., has been installed and is now in full operation at the company's Passaic, N. J., plant. The giant press applies high pressure and heat to precision cure a larger area of heavy conveyor belt at one time than any other known press.

The assembled steam platen press weighs 619,000 lbs. and is 40 ft. long, 10 ft. wide and 13 ft. high. The larger of the two 40-ft. platens weighs 45 tons and took three days to travel the 100 miles by special truck from the Baldwin plant at Eddystone, near Philadelphia, to the Manhattan Rubber plant at Passaic. An addition to the factory more than 150 feet long was built to house the press. Platen area is 40 ft. x 74 in., the width being adjustable below 74 inches according to the width of the belt to be vulcanized.

Baldwin built the press to specifications of Manhattan Rubber engineers, who developed the system of temperature and pressure controls to maintain a uniform condition on the two platens of the press. Eight controllers, each operating individual control systems, are synchronized to maintain proper temperature during the vulcanizing process. Numerous temperature checks were made on several of the platens during the trial runs and the early operation of the press. These indicated that there is less than a two degree difference in temperature over any one platen surface with this system of controls, despite sudden and large charge loads and a surface area almost equal in size to that of a bowling alley.

Before vulcanizing, the conveyor belts are built up of various layers on a long table. These layers consist of rubber compound "cover stock" added to the basic "carcass" or strength member, which is generally cotton duck frictionized (heat impregnated) with rubber. The built-up belt is fed into the Baldwin press, where heat and pressure vulcanize the layers and cover into one integrated piece.

Manhattan has been a pioneer in conveyor belt manufacture and has numerous developments to its credit. This new press indicates a need for providing quick shipments and in maintaining standards of conveyor belt quality, understood to be a tradition with Manhattan for 55 years. Among Manhattan Rubber's "Firsts" in conveyor belt design in recent years include: all-synthetic rubber oil-proof belt for oil-sprayed coal installed 12 years ago, mildew-proofing for underground mine and wet operations, Homocord construction as the first departure from conventional duck strength members.

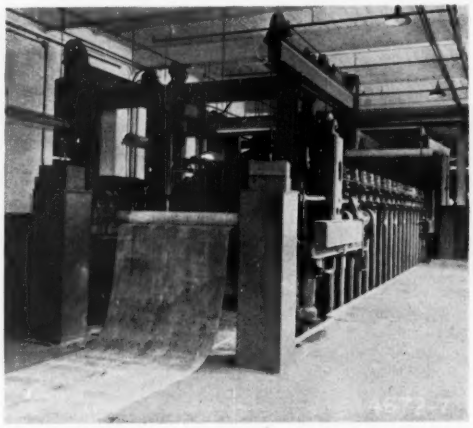
This was the third time that Manhattan has installed the "largest" press then in existence representing different stages of belt development. In 1898 when transmission belt was more important and conveyor belt was still experimental, a press was installed measuring 25 feet long by 50 inches wide, the largest and most modern, a big piece of machinery for any company in those days. The press was purchased primarily on the company's anticipation of the conveyor trend. In 1913, another "giant" press, 36 feet long and weighing 550,000 lbs., was installed, preceding receipt of record conveyor belt order for copper mining in South America, 13,500 feet, nearly 3 miles of it 36 inches wide and weighing 165,000 lbs. This was the beginning of conveyor belt usage on a big scale, in those days mostly in metal mines. Several more of those presses had to be purchased later.

In 1921 at the Stamford, Conn., reservoir dam, 6500 feet of conveyor belt were used for the first time in long distance construction work. In 1924, five miles of Manhattan belts were used at the Wanaque Dam in North Jersey for large construction work using new conveyor methods and observed by engineers from here and abroad. This was followed by other notable constructions: George Washington Bridge anchorages, Tri-Borough Bridge, West Side Highway (first elevated), mile long Conowingo Dam, Wilmington Dam, Osage Dam, Norris Dam and others.

Manhattan Rubber Division, which was founded in 1893, pioneered in the use of conveyor belts as a means of transportation. Manhattan's early executives and belt engineers worked closely with Thomas A. Edison on the conveyor belt development. Through these efforts Manhattan Rubber made the first conveyor belt with a reinforced cover which made the belt practicable for its biggest work in handling heavy, coarse materials.

Conveyor belts for large jobs are engineered for the job, based on stresses, tensions, speeds, materials and volume. Belts are being made stronger with stronger strength members using synthetic fibers and sometimes steel wire in place of cotton for higher tensions and longer lifts to avoid transfer points. Conveyor belts are now being designed for strength similar to constructing a building or bridge, a balance of rubber reinforcements and strength members to meet the stresses and loads.

Baldwin, one of the world's largest producers of hydraulic presses and power tools, has built many other presses for the Manhattan Rubber Division of Raybestos-Manhattan, Inc.



View of the giant hydraulic press for vulcanizing conveyor belts installed at Manhattan Rubber's Passaic, N. J., plant.

Improving the Covering of Wire by Automatic Control of Extruders

By A. C. SANFORD

Engineering Dept., Federal Products Corp., Providence 1, R. I.

IN the process of covering wire with rubber or plastic, there is a great deal of money wasted. For example, each extra thousandth of plastic coating on No. 12 wire is a direct material loss of about $18.00 per day. That there is some loss is generally recognized, but few realize its magnitude. Most people are more or less resigned to this loss, since it is felt that with present methods and equipment there is not too much that can be done about it.

The general aim in coating wire is to meet the minimum standard. In order to meet this standard, the coating generally has to be run well above the minimum, resulting in the giving away of many pounds of expensive material each and every day. The usual production method of measurement is to use hand micrometers or similar instruments and determine the size of the wire on the fly several times each hour. Those who have had anything to do with wire coating know that the covering, even after cooling or vulcanizing, is not absolutely smooth and round. These variations, combined with the compressibility of the coating and the inaccuracies of hand miking, make it almost impossible to eliminate the losses with the usual methods.

Many who have watched an extruder operator mike the coated wire on the fly every fifteen minutes or so, then looked at the production figures for the number of feet of wire coated that day and the number of pounds of plastic or rubber used, have had further cause to wonder as to the effectiveness of the present method of measurement. They have been bothered both by the loss or shrinkage shown and by the worry as to how many feet of wire have been produced with a thin coating to make up for overage on another section.

Actual Losses

Usually, the tolerance on wire coating is given as a percentage and is converted to decimal tolerance for shop use. There is more plastic per foot on larger size wire than on smaller wire. Since the percentage tolerance may be the same for both, the common belief has grown that there is more plastic loss on the larger wire. For example, 10% allowance on No. 4 wire gives a decimal tolerance of .00625 while 10% on No. 10 wire is converted to a decimal tolerance of .00325. On this basis there is more plastic loss per foot of large wire than on the smaller wire. These figures can be converted and they then show that for each .001 extra coating on No. 4 wire approximately .00032 pounds of plastic is used whereas for each extra .001 coating on No. 18 wire approximately .000061 pounds of plastic is used per foot. It is only natural that more attention is commonly paid to the size control of larger sizes.

This line of thought has resulted in a fallacious conclusion, i.e., that there is more plastic and dollar loss in larger wire. The actual production figures prove the contrary. There is much more loss in small wire than in larger sizes. Table I gives some of the actual figures. It will be noted from column 4 of the table that the larger size wire certainly uses more plastic per thousand feet. Checking the actual poundage per hour for an excess of just .001 proves that there is much more coating material lost in production on smaller size wire than on the larger sizes.

With the approximate measuring method usually used, it is entirely possible to have an average over thickness of considerably more than .001. Furthermore, if the operator checks once every 15 to 30 minutes what assurance is there of actual operating conditions during the interval? Actual experience shows that this can be a very important factor. When the figures for just .001 oversize are computed on an annual basis—as shown in Table I—these irrevocable loss figures are enough to make any thoughtful person sit up and take notice.

Automatic Extruder Control

This problem bothered a large wire manufacturer and it interested a prominent gage manufacturer (Federal Products Corporation). Roller type gages with indica-

TABLE I—PRODUCTION COSTS ON PLASTIC COVERED WIRE

Wire Size	No. feet coated per hr.	Circular mils insul. each .001 at normal size	Pounds each .001 per 1000 feet at normal size	Pounds per hour each .001	$ Loss each extra .001 Hour	Day (24 hours)	Year (250 days)
4 Stranded	2,700	715	.321	.868	.39	9.36	$2,340.00
6 Stranded	3,300	619	.278	.920	.41	9.93	2,482.00
8 Solid	5,500	443	.199	1.090	.49	11.82	2,955.00
10 Solid	10,400	331	.149	1.550	.69	16.84	4,210.00
12 Solid	12,800	289	.130	1.670	.75	18.00	4,500.00
14 Solid	15,480	255	.115	1.780	.80	19.20	4,800.00
18 Solid	30,000	136	.061	1.830	.82	19.84	4,940.00

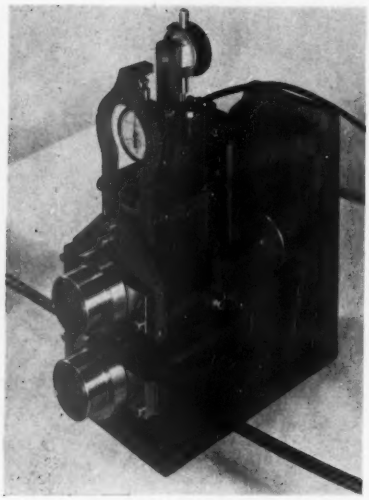


FIG. 1—Measuring portion of the gage which contacts the wire and transmits size variations to the control portion.

tors have been manufactured for years. In some applications these were helpful since the measurement as shown on the dial was not dependent on the operator's feel. Second and third shift men could see the same size as the first shift men, which was not always the case when mikes were used. While the usual type indicating gage has advantages, it also has disadvantages, most of which center about the fact that it does not go far enough.

Coated wire is usually somewhat uneven in diameter. This is due to many factors, among which are variations in drawing speed, plastic coating consistency varying with the temperature of the extruder, and surface irregularities, i.e., stranded wire. In an attempt to faithfully measure the wire, the indicator reflects these conditions by a rapid oscillation or vibration of its hand. This vibration covers a spread on the dial making it difficult for the operator to determine the size of the wire down to the last thousandth of an inch.

With these thoughts in mind, it was decided to tackle the problem of automatically controlling the speed of the wire through the extruder. It was felt that this control would produce a wire of uniform size within certain close limits regardless of other variations which might take place in the machine, and could certainly result in some very worthwhile savings. This development of automatic extruder control has taken some time, but what was a dream in the past is now an accomplished fact. It has been proved possible, not only on a theoretical basis, but on an actual commercial installation, to control the speed of the wire through the extruder and produce wire to remarkably close tolerances.

The measuring portion of the gage is shown in Figure 1 (Federal Products Corporation Model 493m-59) and the complete installation with control cabinet and stand in Figure 2. This gage has been in use for about a year with excellent results and minimum maintenance costs.

The gage controls the extruder automatically, producing wire which is more uniform than was ever before possible. With random hand miking and manual control extruder adjustments are made approximately once every 15 to 30 minutes. Actual test runs with the automatic gage control show that this is inaccurate and insufficient. Wire size changes almost continually, tending to drift towards the high or low limit. Frequent corrections, on the average of once a minute, are required to hold the wire within the desired limits. While it is not humanly possible for the operator to make these frequently required corrections, the gage can make adjustments every minute or so as required.

It is apparent, therefore, that even if the operators on various extruder shifts were all equally consistent in measurement, and adjusted the machine accurately and regularly, they could not begin to make wire of the quality produced by automatic control. The automatic gage will hold the average diameter of wire within a total variation of ±.001.

Operation of the Gage

The extruder control consists of two basic units—measuring and control. The measuring portion (Figure 1) contacts the wire and transmits size variations to the control portion of the gage. The control consists of an electrical switch arrangement (Federal Products Corporation Electricator) attached to the back of the indicator and tied in with a suitable control panel. Figure 2 shows the gage power unit and switches mounted on a stand located in the passline of the wire just after the cooling water bath. Figure 3 is a view of the gage from the capstan take-up looking towards the spark tester and extruder and shows the operator in position. Figure 4 was taken looking towards the take-up capstan and shows greater detail of the control box and mounting.

The measuring portion of the gage consists of a pair of rollers, the lower being fixed and the upper mounted on a parallel link floating unit. The lower roller cannot move vertically, while the upper roller can move vertically to follow the wire size changes. The electrical switch (Electricator) follows the movement of the upper roll. When the wire becomes either oversize or undersize the switch (Electricator) completes a circuit.

If the wire remains beyond tolerance for more than a few seconds, the oversize or undersize signal causes the gage power unit to operate the capstan speed control varying the wire feed through the extruder. The capstan

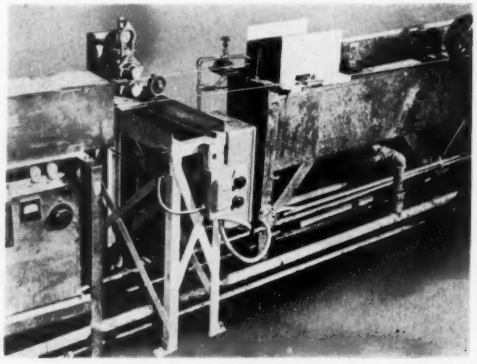


FIG. 2—Complete installation, with control cabinet and stand. The stand is located in the passline of the wire just after the cooling bath.

FIG. 3—View of the gage from the capstan take-up looking towards the spark tester and extruder.

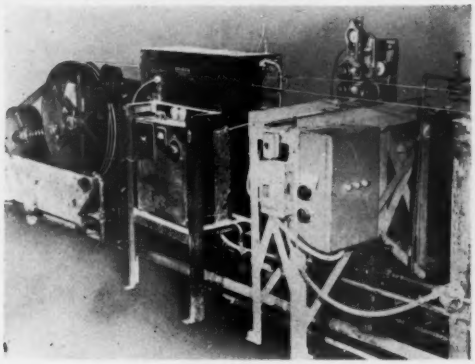


FIG. 4—This view taken while looking towards the take-up capstan shows greater detail of the control box and mounting.

speed control is operated for a short length of time much in the manner of manual jog switch operation.

After the speed has been adjusted, the gage shuts itself off for a few seconds, waiting for new wire to come along before another reading is taken. When wire which was coated after the adjustment was made comes to the gage, the entire cycle starts again. If the wire is within the limits, the gage okay light flashes on and remains on until the wire again goes beyond tolerance. When this happens, the gage automatically goes into operation and adjusts the machine to compensate.

While the theory of operation is simple enough, the actual gage required considerable practical experience to produce a mechanically simple unit and an electrically reliable circuit.

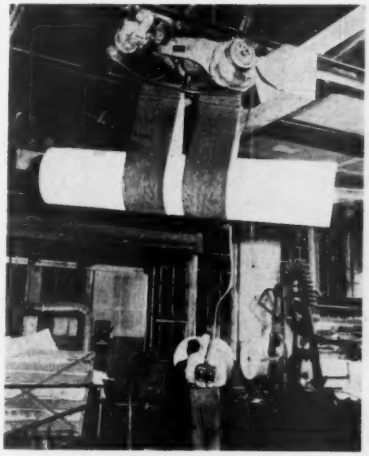
Equipment of this type, while not inexpensive in itself, is not expensive when its price is compared to the continuing benefits. The savings in plastic or rubber material alone amortize the gage in a comparatively short time, approximately 6 months. In addition to the direct material savings, there are also the advantages of no undersize sections in the wire and the ability of all operators to run the same wire size.

In its present form, the automatic machine control unit is suited for installation on any type of continuous process where the producing machine can be adapted to push button control. While the machine may at present be set up for manual control, if it is adaptable to push buttons, the gage control unit can be tied in with these same push buttons and will take over complete operation and control of the process.

Novel Twin-Belt Sling Speeds Hoisting of Rolled Materials

THE ACCOMPANYING illustration depicts a useful idea which simplifies the hoisting of paper, textile, rubber, and other rolled materials. Two sections of wide belting are secured at each end to specially formed sections of bar stock and fashioned into a hoisting sling which handles awkward rolls without the risk of their sliding out or swinging dangerously as they are transported. The sling is wrapped quickly around the roll as it lies in storage or in a machine, and is attached to a hoist hook for transportation through the air above machinery and supplies. Transporting overhead avoids obstacles which necessarily would be encountered if the roll was transported over the floor. The Yale hoist used in this case is a five-ton variable speed motor-driven trolley type. It is mounted perpendicularly to the I-beam on which it travels. The operator controls lifting, lowering, and transverse motion by push-button controls. A metal chain supports the control box and takes all weight from the electrical cable. Notice in the photograph that all three overhead I-beams shown are equipped for hoist operations. At the extreme left a portion of another hoist can be seen. These adequate hoisting facilities provide for quick and efficient handling and make use of oft-wasted overhead space, or "air rights."

Photograph and data supplied by the Yale & Towne Manufacturing Co., Philadelphia, Penna.



Application of the novel twin-belt sling is clearly shown in this illustration.

Editorials . . . . . .

Reduced Use of Synthetic

IN accordance with the agreement reached at the recent Anglo-American-Canadian Conference on the sterling problem held in Washington, D. C., an amendment to Allocation Order R-1 relaxing mandatory consumption requirements for synthetic rubber was issued by the Commerce Department on September 23. Basically, the amendment permits the possible use of an additional 50,000 tons of natural rubber per year. The amount of the reduction, incidentally, was only 10,000 tons a year less than estimated in this column last month.

It will be realized that the revision in the mandatory consumption of synthetic rubber does not necessarily imply that domestic rubber manufacturers will sharply reduce their use of GR-S. It is rather an expensive process in many instances to revert completely from the use of synthetic to natural rubber, and the cost factor of the raw material is very often the deciding factor in the transition. A brief survey made by this journal indicates that the majority of manufacturers are adopting a wait-and-see attitude, despite the fact that since devaluation natural rubber has been underselling the synthetic product. Should the current price of ribbed smoked sheet prove to be more than transitional in nature, then it is probable that a shift to the natural product would be realized.

As pointed out in these columns last month, however, a radical shift to natural rubber on the part of those manufacturers now utilizing GR-S might readily result in a sharp increase in the price of the plantation product. This is because of the demand-and-supply pattern evident thus far this year. According to the latest figures released by the Secretariat of the Rubber Study Group, world consumption of natural rubber in the first eight months of this year amounted to 950,000 long tons (including estimated imports into Russia of 77,500) as against total production of 947,000 long tons. The pattern could, of course, change sharply if the political situation in Indonesia was stabilized, but this is hardly likely for the balance of the year. The statistics for August showed world consumption of 110,000 long tons (including estimated imports into Russia of 5,000 tons) and world production of 130,000 tons.

Estimates of new rubber consumption in the United States, set at 980,000 tons earlier this year, are now calculated at closer to 960,000 tons for the current year. Consumption for 1950 is now estimated at 925,000 tons. In view of the declining consumption trend, it can readily be seen that the over-all consumption of synthetic for the coming year will depend upon the price of natural rubber and the advantages offered by new polymers, particularly the low temperature polymers which will be available in sufficient supply within the next few months.

Quantity Discounts

FOR some strange reason, the rubber industry seems to be the guinea pig selected by the government when it propounds some new economic theory or attempts to foster some new twist in legal procedures. The latest step in this direction was taken by the Federal Trade Commission when it proposed last month to establish a quantity discount rule for the tire industry. This rule simply stated says that a carload of 20,000 pounds should be the maximum quantity of replacement tires and tubes upon which differentials in price, because of quantity, should be granted. Or, in other words, the purchaser of two or more carloads should pay the same rate as the purchaser of a single carload.

The proposed ruling is, of course, an attempt to protect the small quantity purchaser, and as such merits some consideration. Power for the ruling is contained within the provisions of the Robinson-Patman Act, but this is the first time it has been incurred. On the surface, it would seem that if carried out the net effect of the ruling would be to increase the price of tires and tubes to the motorist. On this basis alone, the power to enforce the ruling, irrespective of its merits, should be seriously questioned.

CURRENT NEWS OF THE MONTH

SYNTHETIC RUBBER RATIOS CUT TO ALLOW USE OF MORE NATURAL

Government regulations requiring the mandatory consumption of specified amounts of synthetic rubber in the United States have been relaxed, effective immediately, so that the rubber manufacturing industry will have the opportunity, if it so elects, to use an additional 50,000 long tons of natural rubber in 1950. The decision to provide for a broader market for natural rubber in the United States was agreed upon at the conferences recently held in Washington, D. C., by Canada, the United Kingdom and the United States. The amount of relaxation in the required use of synthetic was determined after consultation with the Rubber Industry Advisory Committee.

In order to allow for this reduction the current Government policy concerning the consumption of synthetic rubbers has been modified so that the total amount of general purpose synthetic rubber produced and used in the United States shall be 25% of the total of this type of rubber and natural rubber consumed annually. The previous percentage figure was 33⅓%.

This decision takes into consideration both required and voluntary usage, and involves a possible reduction of 35,000 long tons of GR-S. Further, the reduction in the amount of butyl rubber that must be consumed will be no greater than required by Allocation Order R-1, 15,000 long tons per year. This figure is 15,000 long tons less than was previously required.

Together with the earlier modifications of the order in July, 1949, rubber manufacturers now have the option of consuming an additional 65,000 long tons of any type of new rubber a year. At that time, the amount of synthetic rubber required to be used in the manufacture of certain tires and tubes was revised to the levels maintained until this more recent revision.

Significant Changes Noted

The most significant change reduces the minimum group average from 45% to 35% GR-S of the total natural rubber plus GR-S in Group I tires. This group includes all truck and bus tires 7.50 cross-section and smaller, not including low platform trailer and wire tires, all passenger and motorcycle, front farm tractor and garden tractor tires. Also, all farm implement, garden implement and industrial tires 7.50 and smaller. The change is estimated to account for 36,000 long tons of new rubber.

The other change in tire production requirements reduces the percentage of GR-S from 80% to 75% in all rear farm tractor and all other farm implement tires, not including rice and cane spade grip tires. This change permits approximately 1,400 long tons of new rubber to be natural rubber, if the consumer so elects.

Butyl Requirements Amended

The other major change in the order removes entirely the required use of butyl in all inner tubes. However, a new paragraph states that should the total annual consumption of butyl be indicated as less than 15,000 long tons, specification controls requiring the consumption of butyl in certain inner tubes will be reestablished.

The manufacturer of tires and tubes will determine for himself changes in his tire production pattern made possible by the new R-1 Order. No change was made in manufacturing specifications for camelback. The consumption tonnages mentioned above are estimated for the calendar year 1950 when the total consumption of new rubber is projected at 925,000 long tons.

If 925,000 long tons of new rubber are consumed in 1950, it is estimated that the consumption of rubber would be as follows: Natural rubber, 642,000 long tons; required GR-S (U. S. produced), 159,000 long tons; voluntary GR-S (U. S. produced), 53,000 long tons; special types of butadiene and styrene rubber and Canadian general-purpose rubber, 17,000 long tons; butyl rubber (of which 15,000 long tons will be assured by the renewal of the required usage, if necessary), 20,000 long tons; other synthetic rubbers, 34,000 long tons. Total, 925,000 long tons.

A third change of relatively minor significance permits slightly different markings on inner tubes made of butyl. Hereafter, such inner tubes and no others will bear one or more light blue stripes, one of which must be at least 3/16-inch wide. Previous inner tube marking has required only one blue stripe 3/8-inch wide.

Smallest Rubber Mill

The University of Buffalo, Buffalo, N. Y., lays claim to the smallest rubber mill in the world. Developed in the chemistry laboratories of the university, it can compound samples of rubber as small as one-half of a gram. In comparison, industrial rubber mills handle 300 to 400 pound samples. The tiny mill, driven by a one-third horsepower motor, has rolls four inches long and one and one-half inches in diameter. It has a maximum capacity of 10 grams. Working with samples 1/60 of an ounce enables the university to compound the rubber and test it in laboratory sizes, officials said.

PRESIDENT OF U. S. RUBBER SCORES ANTI-TRUST CHARGES

Charges brought against the U. S. Rubber Co. in the federal government's lawsuit charging violation of the anti-trust laws by E. I. du Pont de Nemours & Co., Inc., General Motors Corp., U. S. Rubber Co., and members of the DuPont family "have badly twisted and distorted the facts," said Harry E. Humphreys, Jr., president of the rubber firm, in the October issue of *US*, company magazine. The Justice Department accused the DuPont family of controlling General Motors Corp. and U. S. Rubber Co. It further charged DuPont with violating the anti-trust law by making General Motors and U. S. Rubber deprive outside suppliers of an opportunity to compete by making them buy from DuPont.

It is also charged that DuPont forced GM and U. S. Rubber to expand their major fields of manufacturing and to enter new fields, such as household appliances, to enlarge "the closed and guaranteed market" for sale of DuPont products. The government is seeking to force DuPont to get rid of its General Motors stock, and members of the DuPont family to sell their stock in U. S. Rubber.

"Some of these charges are untrue. Others are only half true. We believe that all our operations have been legal and in the best interests of the public," Mr. Humphreys said. He said members of the DuPont company own 15% of the common stock and 8% of the preferred stock of U. S. Rubber. "This leaves 77% in the hands of 26,000 other people who own our common and preferred stock," the company president said.

In answer to the government's charge that the rubber company has been "unreasonably restraining and monopolizing" trade, Mr. Humphreys stated: "There certainly is no monopoly in the rubber industry. It is one of the most competitive in America."

Answering the charge that U. S. Rubber acts to restrain trade by doing business with General Motors and DuPont, Mr. Humphreys said: "We buy from both companies and sell to both companies. However, our business with these companies, which has been legal and proper and extremely competitive in every way, is only a minor part of our total business. Most U. S. Rubber products are sold to the public through hundreds of thousands of small independent merchants, dealers and distributors and jobbers. Our tires alone are sold by 37,000 small independent dealers, distributors and jobbers."

STANDARDS ASSOCIATION REVISES MILL AND CALENDER SAFETY CODE

The American Standards Association, Inc., 70 East 45th Street, New York 17, N. Y., has announced the publication of revisions on the American Standard Safety Code for Mills and Calenders in the Rubber Industry. The revisions are the work of Sectional Committee B28 on Rubber Mills and Calenders. Ernest W. Beck is chairman of this committee which is sponsored by the National Safety Council and contains representatives of safety organizations, government, and labor.

Since 1927, when the first edition of this code was published, many changes have taken place in the rubber and allied industries. New synthetic rubber tire ingredients, such as butadiene and styrene, are now being produced on a large scale for the first time, and tremendous developments have taken place in the production of high speed machinery used in processing rubber. Today mills are being operated that are as large as 84 in. in diameter and can handle a 600-lb., or more, batch of rubber.

However, the primary safety problem in 1949 as well as 1927 is to keep the workman out of the "bite" of the rolls. In trying to increase the safety factor in operating mills the committee changed the method for determining the stopping limits for mills. Formerly the limits were established on the basis of the diameters of the front rolls, and computations to determine the stopping distance were based on the size of the roll rather than on speed. Today, the surface speed of the front roll is the important factor in determining limits.

The differences between stopping limit requirements for existing installations and for new equipment purchased after the effective date of the new code recognize the better braking performance possible with modern electric equipment. All new group-driven mills purchased after the effective date of the code are to stop within a distance not greater than 1¾ per cent of the travel of the rolls as measured on their surface in feet per minute and all new single mills are to stop within a distance not greater than 1¼ per cent of the travel of the rolls as measured on their surface in feet per minute.

The method for determining the stopping limit requirements for calenders has not been changed except in the case of new equipment. The 1927 code used drive roll surface speed as the determining factor and 2 per cent as the limit. The revised code continues the practice for all existing calenders but requires that new calenders purchased after the effective date of the code be capable of stopping within 1¾ per cent of the surface speed of the drive rolls in inches.

The recommendations for stopping limits were not made arbitrarily by the committee. As a basis for its decisions, thousands of test steps were made under operating conditions on machines in many plants throughout the country. A subcommittee made up of electrical engineering experts studied the data obtained, balanced this information against technical data on the performance of new equipment, and used the results in developing a revised set of stopping limits. These new limits recognize the advance made since 1927 in developing new and better braking devices which make it possible to stop the rolls in shorter distances than ever before. As a result of all this work, the rubber industry is the only industry in the country today that has a code designating the stopping distance of production machinery in inches —which means in some cases stops within fractions of seconds.

The American Standard Safety Code for Mills and Calenders in the Rubber Industry, B28.1-1949 can be obtained from the American Standards Association, 70 East 45th Street, New York 17, N. Y., at $1.00 per copy.

Coming Events

Oct. 24-28. 37th National Safety Congress and Exposition, Chicago, Ill.

Oct. 25. Washington Rubber Group, Hotel Hamilton, Washington, D. C.

Oct. 27. Northern California Rubber Group, Claremont Hotel, Berkeley, Calif.

Oct. 28. Akron Rubber Group, Hotel Mayflower, Akron, Ohio.

Nov. 1. Los Angeles Rubber Group, Hotel Mayfair, Los Angeles, Calif.

Nov. 4. Chicago Rubber Group, Morrison Hotel, Chicago, Ill.

Nov. 17. Northern California Rubber Group, Claremont Hotel, Berkeley, Calif.

Nov. 24. Quebec Rubber & Plastics Group, Canadian Legion Hall, Montreal, Canada.

Nov. 27-Dec. 2. A.S.M.E., Annual Meeting, New York, N. Y.

Dec. 4-7. American Institute of Chemical Engineers, Wm. Penn Hotel, Pittsburgh, Penna.

Dec. 9. Los Angeles Rubber Group, Xmas Party, Los Angeles Breakfast Club, Los Angeles, Calif.

Dec. 9. Detroit Rubber Group, Detroit-Leland Hotel, Detroit, Mich.

Dec. 10. Southern Ohio Rubber Group, Miami Valley Golf Club, Dayton, Ohio.

Dec. 16. N. Y. Rubber Group, Henry Hudson Hotel, New York City.

Dec. 16. Boston Rubber Group, Somerset Hotel, Boston, Mass.

Dec. 16. Chicago Rubber Group, Xmas Party, Morrison Hotel, Chicago, Ill.

Representing Imperial Commodities

The firm of Frederick J. Horn, which maintains offices at 70 Pine St., New York, N.Y., and 109 North Union St., Akron 4, Ohio, is now representing the Imperial Commodities Corporation, importers and dealers in crude rubber, as agent in the Akron area. The firm is no longer acting as agent for Littlejohn & Co., Inc. David W. Thomas, formerly with the Firestone Tire & Rubber Co., has joined the Horn organization in the Akron area.

INCREASE IN RUBBER FLOORING FORECAST BY MAJOR PRODUCER

The nation-wide gain in popularity of rubber flooring is indicated by an increase of over 21% this year. According to Robert G. Marcus, general manager of the American Tile & Rubber Co., Trenton, N. J., one of the leading producers of rubber tile floor coverings, an approximate increase of 15,000,000 square feet will take place in 1949 during the period when the sales of other hard surface floor coverings will fall off. The 1949 total figure for the industry, he estimates, should approximate 85,000,000 square feet as compared with the 70,000,000 square feet in 1948.

American Tile & Rubber Company and its dealers throughout the United States and Canada are planning to meet the larger volume of sales anticipated in 1950 with increased production. A larger plant expansion program is under way at Trenton to take care of domestic demand. The company's plant in Sherbrooke, Quebec, Canada, which began producing rubber tile in Canada this summer, is being likewise expanded.

Chief reason for the gain in popularity is the fact that rubber tiling is no longer a luxury. New industrial techniques have permitted production economies, so that today rubber flooring sells for only a few pennies more per square yard than cheaper floor coverings.

Mr. Marcus points out that rubber has the added advantages of longer wear and ease of maintenance which more than compensate for the slight difference in cost. Tests have shown that rubber flooring even outwears marble. In addition, the sensational developments in rubber compounds during the recent war brought dramatically to the public's attention the fact that rubber is durable as well as colorful.

The resiliency of rubber flooring makes it less fatiguing to the step. The fact that it is by far the most resilient of all hard surface floor coverings is another factor contributing to increased demand.

From the decorative point-of-view, rubber flooring also has made great strides. Today, it is one of the most colorful floor coverings, permitting unlimited design effects. The American Tile & Rubber Company, alone, now has in its standard line 22 different colors.

A few new resilient floor coverings have come on the market since the war, Mr. Marcus stated, but none of these have approached the long-wearing, resilient and colorful qualities of rubber flooring. Plastic tile producers claim their products are grease resistant, Mr. Marcus added, but most of these are made of thermoplastic materials which burn or melt when they come in contact with lighted cigarettes or matches.

New Plant for American Polymer

The American Polymer Corp. has begun production at its new plant near Springfield, Ill. The equipment at the new plant includes facilities for polymerizing vinyl, acrylic, methacrylic, styrene, acrylonitrile, allyl and similar polymers. Company headquarters are located at Peabody, Mass.

ASME RUBBER-PLASTICS GROUP HOLDS FALL MEETING IN ERIE

The Fall Meeting of the Rubber and Plastics Division of the American Society of Mechanical Engineers, held in Erie, Penna., on September 28, in conjunction with the 1949 Fall Meeting of the parent society, was well attended. Two technical sessions were held, one in the morning devoted to plastics and one in the afternoon on rubber. Approximately 40 were in attendance at the morning session and 60 at the afternoon session. The sessions were held at the Erie Y.M.C.A. and the facilities were excellent.

Each session featured the presentation of three papers. N. R. Reyburn, chief engineer, Applied Plastics Division, Keystone Brass Works, acted as chairman of the plastics session, and H. V. Strong, supervisor of materials, Research Department, Lord Manufacturing Co., of the rubber session. They were assisted by Paul C. Roche and A. G. Gifford, respectively.

Papers at Rubber Session

The first paper at the rubber session was a report on "Advances in Heavy Rubber and Plastics Machinery," by Donald C. Chase, manager of the Rubber and Plastics Machinery Sales Division of the Farrel-Birmingham Co., Ansonia, Conn. Mr. Chase reviewed the latest designs of heavy machinery for processing rubber and plastics, pointing out that speeds, production and power requirements are being increased and greater attention is being given to reduction of wear and maintenance. He stressed the importance of gauge control in calendering and discussed various methods of overcoming roll deflection.

Tire Curing Machinery

A combination paper and movie was next presented by L. E. Soderquist, of the McNeil Machine & Engineering Co., Akron, Ohio, under the title of "Development of Machinery for the Curing of Tires." The movie depicted progressive development in tire curing from 1915, when a good deal of the preparatory work was accomplished solely by hand, up through the development of the "Bagomatic" tire press recently developed by McNeil Machine. This new unit, which enables the use of an air bag within the press itself, reduces cure time to approximately 20 minutes, according to the speaker. The numerous features of the "Bagomatic" machine were stressed in the paper.

J. S. Detwiler, divisional sales manager of the Taylor Instrument Companies, Rochester, N.Y., gave a paper on "Time as a Process Variable." This paper dealt with the reasons for considering time as a variable as well as the other well-known variables, such as temperature, pressure, rate of flow and liquid level, particularly in the rubber and plastics fields. Mr. Detwiler discussed various applications which require that time be seriously considered for best results.

At the plastics session, a report on "Strength-Variance Studies of Plastics" was given by W. J. Gailus, of the Massachusetts Institute of Technology, Cambridge, Mass. Mr. Gailus described a statistical program carried out as preliminary work of the fundamental investigation being made at M.I.T. into the physical properties of polymethyl methacrylate. The program covers the evaluation of the over-all variability of material supplied by different manufacturers, and the speaker brought out the effect of interactions and the necessity for subdivided analysis.

The effects of cyclic and of continuous immersion in hepatane, toluene, and SR-6 on the weight, dimensions, and flexural properties of 19 samples of laminated plastics were described in a paper on "Effect of Fuel-Immersion on Laminated Plastics," prepared by W. A. Crouse, Margie Carickoff, and Margaret A. Fisher, of the National Bureau of Standards, Washington, D.C., and presented by Mr. Crouse. The study indicated that no one sample exhibited smaller changes than all other samples in all properties for all fuels and for both cyclic and continuous immersion.

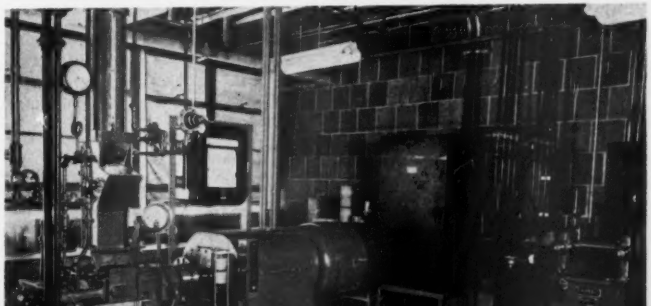
"Creep and Fatigue Properties of Plastic Laminates" was the title of a paper by W. N. Findley and W. J. Worley, of the University of Illinois, Urbana, Ill., which was presented by Dr. Findley. The results of mechanical tests on five laminates were reported, these laminates being: canvas laminate molded at low pressure, grade-C laminate, rayon laminate, paper laminate, and polyester glass-fabric laminate. It was indicated that of the laminates studied, the glass-fabric laminate had the most desirable mechanical properties for nearly all of the properties measured.

A combined dinner meeting of the executive, general and advisory committees of the Rubber and Plastics Division was held at the Hotel Lawrence on the evening of the meeting, presided over by Don Cornell (Goodrich Research Center), chairman of the division. Nominations for 1950 officers were made and programs for future meetings discussed. An election of officers will be one of the features of the annual meeting of the Division, which will be held in New York City during the period November 27-December 2.

Develops Butyl Bonding Agent

The problem of bonding butyl rubber to metal during molding operations, one of today's most difficult adhesion tasks, is said to have been solved by a new preparation developed by Dayton Chemical Products Laboratories, Inc., West Alexandria, Ohio. Applications include vibration-reducing mountings, bumpers, and other molded articles where butyl rubber must be adhered permanently to a metal base. The company has also developed related formulations which bond butyl to other synthetic rubbers. Since its development, butyl has been most difficult to adhere or splice to other materials.

INTERIOR VIEW OF NEW M.I.T. RUBBER AND PLASTICS LABORATORY



Above is shown an interior view of the new rubber and plastics materials laboratory opened recently at the Massachusetts Institute of Technology. The laboratory, equipped with facilities provided by the Elastic Colloid Research Corporation, will be associated with the R. S. Crawford Memorial Graduate Research Fellowship. Dr. Ernst A. Hauser, professor of chemical engineering at M. I. T., is director of the laboratory, complete details on which were furnished in our July, 1949, issue.

GOODRICH-URW SIGN CONTRACT ENDING COMPANY-WIDE STRIKE

The United Rubber Workers, CIO, ended their 35-day strike against the B. F. Goodrich Co. on September 30, when the company agreed to the payment of a "ten-cent package" to be devoted to improvements on existing pension and insurance plans. While details of the agreement are to be worked out in subsequent meetings of company and union representatives, it was stated specifically that the pension and insurance programs would be merely extensions of systems in existence, and would not only be contributory but voluntary on the part of employees. The walkout of approximately 17,500 employees began on August 27.

The union started the strike of Goodrich workers in seven plants across the country under the leadership of George R. Bass, president of Goodrich Local 7 in Akron, Ohio, seeking three basic demands: a wage increase across the board of 25 cents an hour; a company-financed pension plan that would guarantee a payment of $100 a month to workers at age 60; and representation of Canadian locals in company-wide bargaining. None of these demands were granted by the company. The contract will run until February 1, 1951, and may be reopened after April 15, 1950, respecting wages only.

Conditions of Settlement

The settlement was based upon seven conditions, both sides stipulating that the new contract, when worked out, would include improved employee benefit programs, a check-off of union dues, revised holiday pay programs, a revised vacation program, improved employee service credit rules, and improved wage guarantees.

Although all final details remained for settlement, the rubber workers appeared to be getting a better pension program than that won at the Ford Motor Co. recently, where the company agreed to contribute 8¾ cents an hour to a pension plan to make sure that a worker with 30 years of service at the age of 65 would receive payments of $100 a month, including Social Security.

As an example, a Goodrich worker at the age of 65 who had made maximum Social Security payments for 30 years, would receive a total of $108.45. If married, the Goodrich worker would receive a total of $134.25 a month, or 53.7% of his average earnings. This Goodrich settlement was expected to be advanced as a demand for final adjustment of differences between the union and the other three members of the "big four" of the industry—U. S. Rubber, Goodyear and Firestone.

Outline Employee Benefits

On the basis of rough estimates it is believed that improvements in present employee benefit plans can be accomplished along these lines: employee contributions for group life insurance can be reduced and employee contributions for group hospitalization and surgical insurance can be reduced.

The present group sickness and accident insurance program, effective only in the Akron and Los Angeles plants and providing benefits of $15 a week for men and $10 for women, can be replaced by a new program that will provide benefits of $25 for men and $18 for women and can be extended to all plants except Los Angeles. Employee contributions can be at the rate of $1 per month.

Supplement retirement income can be provided for employees having as much as 20 years' service in amounts sufficient to provide minimum total retirement income. This would include Social Security benefits of from 25 to 33% of the individual employee's average monthly earnings since 1937. On this basis, family retirement income, including the wife's Social Security benefits, should range from 33 to 40% of the individual employee's past average monthly earnings.

It is understood that the above are estimates not supported by actuarial data. The settlements, both sides agreed in a separate memorandum, depend upon many studies by actuarial experts. It would effect all seven plants at Akron; Oaks, Penna.; Tuscaloosa, Ala.; Clarksville, Tenn.; Miami, Okla.; Los Angeles, Calif., and Cadillac, Mich.

Collyer Issues Statement

Apropos of the agreement reached between the union and Goodrich, John L. Collyer, president of the company, stated that the recommendations of the President's Steel Fact-Finding Board were considered by the company and the union during negotiations. Still better pension and social insurance plans will be made available under the terms of the settlement, he said, but this will result in substantial increases in the cost of Goodrich products.

Greater productivity through more effective use of material, equipment and employee's time is the urgent problem for B. F. Goodrich and for most American industries if better values are to be provided, he said. This is the only way that the standard of living of Americans can be maintained and improved, Mr. Collyer noted.

The Goodrich head said that productivity in certain divisions of the company is today lower than pre-war. We cannot "pull ourselves up by our boot straps" so it is essential that we recognize that purchasing power is not money but what money will buy. Selling prices of most products of the rubber industry have been uneconomically low this year, severely affecting company products, Mr. Collyer said.

Profit is the only sure road to employee security. Employees of a company invest their time, effort and skill in return for wages and employee benefits. If business makes a profit, most will have good permanent jobs. If the business loses money for long it goes bankrupt, and employees lose their jobs. Thus, both stockholders and employees have an interest in seeing to it that their company makes a profit.

TLARGI OFFERS INTRODUCTORY COURSE IN RUBBER TECHNOLOGY

As a service to its members and the rubber industry, the Los Angeles Rubber Group, Inc., has arranged to offer an introductory course in basic rubber technology which will be given for 15 Monday evenings from 7:00 to 10:00 P.M. starting October 17, in the laboratory of H. M. Royal, Inc., Los Angeles 11, Calif. The class will be conducted by R. B. Stringfield, president of the Fullerton Manufacturing Co., and Fred W. Woerner, chief chemist of the Los Angeles Standard Rubber Co., both of whom have had many years of experience in the industry and in teaching at the University of Southern California.

Subjects discussed will include elements of compounding, vulcanization, physical testing, milling, calendering, extrusion, presses, hydraulic systems, mold design and cost estimating, and will be accompanied by student laboratory work. A suitable certificate will be given on satisfactory completion of the course. No specific educational background is necessary to qualify for enrollment.

Due to space limitations, enrollment has been restricted to 20 students and confined, for the time being, to members of TLARGI. Cost to the student will be $15.00 for the course, the balance of the expense being covered by TLARGI. Nonmembers of TLARGI wishing to take the course must become members in the usual manner. Applicants will be notified of their enrollment and will be expected to pay the entire fee at the first meeting of the class.

Buckmaster Elected URW Head

The United Rubber Workers of America, CIO, meeting in Toronto, Ont., Canada, recently, re-elected Leland S. Buckmaster of Akron, Ohio, as president. The 14th annual convention of the union voted to reinstate Mr. Buckmaster after his ouster on charges of "conspiracy" and "malfeasance" some months ago. Mr. Buckmaster defeated George Bass, who has opposed him in the last four union elections, and replaced H. R. Lloyd, who succeeded him after his ouster. Joseph Childs was elected vice-president of the organization. Desmond Walker was named union general secretary-treasurer. The tenor of addresses presented at the convention called for improved pensions, sickness and welfare benefits; a universal 6-hour day in every rubber, cord, linoleum and plastic plant in the United States and Canada; and immediate elimination of area wage differentials.

Monex in Pelletized Form

Naugatuck Chemical Division of the U. S. Rubber Co., Naugatuck, Conn., has announced the manufacture of Monex "Naugets," first in the line of rubber chemicals produced by the company to be offered in pellet form. "Naugets" are said to be a boon to the operators who must weigh, or mix Monex, and disperse faster than the old powder form. Mixing times can be reduced with no objectionable dust.

ACS RUBBER DIVISION HOLDS FALL MEETING IN ATLANTIC CITY, N. J.

Approximately 600 members and guests attended the Fall Meeting of the Division of Rubber Chemistry of the American Chemical Society, held in Atlantic City, N.J., on September 21-23, in conjunction with the 116th meeting of the parent society. Headquarters for the Division were at the Chalfonte-Haddon Hall, where all activities were concentrated. The meeting featured the presentation of 19 technical papers, election of officers, a meeting of the 25-Year Club, a business session, and the divisional banquet. Abstracts of the technical papers appeared in our August, 1949, issue.

The election of officers, a feature of the business meeting, resulted in the following: *Chairman*, F. W. Stavely, Firestone Tire & Rubber Co., Akron, Ohio; *Vice-Chairman*, J. H. Fielding, Armstrong Tire Co., West Haven, Conn.; *Secretary*, C. R. Haynes, Binney & Smith Co., New York; *Treasurer*, C. W. Christensen, Monsanto Chemical Co., Akron, Ohio.

Twelve sectional directors were elected, representing local rubber groups sponsored by the Division, as follows: Akron —A. E. Juve (Goodrich); Boston—F. H. Amon (Cabot); Buffalo—A. H. Davis (Dunlop Tire); Chicago—P. F. Niessen (Victor Mfg. & Gasket); Connecticut—C. M. Doede (Connecticut Hard Rubber); Detroit—G. F. Lindner (Minnesota Mining); Los Angeles—R. E. Hutchinson (Firestone); New York—D. E. Jones (American Hard Rubber); Northern California—A. E. Barrett (Mare Island Rubber Laboratory); Philadelphia—L. K. Youse (U.S. Rubber); Rhode Island—F. H. Springer (Davol Rubber); Southern Ohio—J. E. Feldman (Inland Mfg. Div., General Motors). Seward Byam (DuPont) was re-elected director-at-large. R. G. Seaman (*India Rubber World*) was chairman of the Nominating Committee.

Meeting of the 25-Year Club

A luncheon meeting of the 25-Year Club was held at noon on September 21, with John P. Coe (Naugatuck Chemical) acting as chairman. It was the fourth meeting of the club, and approximately 90 members were present. Those present with the oldest records of service in the industry included C. R. Haynes (1904) and Ban Henderson (1906). Among new members of the club introduced at the meeting were C. Carlson (General Tire), George Haslam (N. J. Zinc), Sam Tinsley (Vanderbilt) and Gus Maassen (Vanderbilt).

Chairman Coe announced that there were now approximately 300 registered members in the club. He also announced that Ed Kvett (Baldwin Rubber) would act as chairman for the next meeting of the club, which will be held at Detroit. The question was raised whether it would be preferable for the club to hold a dinner meeting or buffet meeting, rather than a luncheon meeting, and this will be acted upon at a later date. The Standing Committee of the 25-Year Club includes E. B. Curtis (Vanderbilt), H. A. Winklemann (Dryden Rubber), Bruce Silver (N.J. Zinc), R. P. Dinsmore (Goodyear), and W. O. Hamister (Naugatuck Chemical).

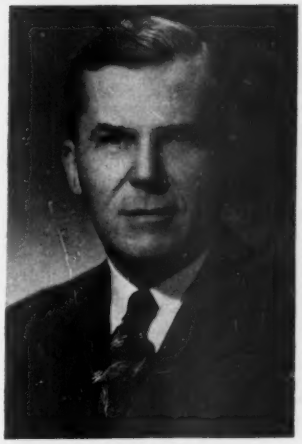
Business Session Is Held

The business session was held on the morning of the final day of the three-day meeting, with Howard I. Cramer (Sharples Chemicals), the retiring division chairman, presiding. Dr. Cramer announced that the Executive Committee had approved official sponsorship by the Division of the Washington Rubber Group, making the 13th local group to come under such sponsorship. It was also announced that the committee was considering a few minor amendments to the by-laws, which will come up for division consideration in the near future, that a new membership directory was being prepared and would be supplied to members shortly, and that the 1944-45 Bibliography of Rubber Literature was under compilation and would be published early next year. Dr. Cramer also announced that the Charles Goodyear Medalist Committee had selected C. C. Davis, chief chemist of the Boston Woven Hose & Rubber Co., and editor of *Rubber Chemistry and Technology*, as the Goodyear Medalist for 1950.

During the session a minute's silence was observed in memory of three division members who had died since the previous meeting, namely, A. Donald Cummings, Laurence D. Ackerman, and Chester E. Linscott. A brief report on behalf of the Auditing Committee was given by Emil Krissman (DuPont), to the effect that the committee had found the division books in good order. Arthur Drake (Hercules Powder), chairman of the Membership Committee, reported that as of September 1st total division membership amounted to 2,421, an increase of 171 since the previous meeting.

Dr. Stavely, the newly-elected chairman of the division, then took over the meeting and expressed appreciation for his election. He then stated that the Spring Meeting of the Division would be held in Detroit on April 19-21, in conjunction with several other divisions of the parent A.C.S. The Fall Meeting will be an International Meeting and will be held in Cleveland the week of October 28, 1950. Favorable response to this International Meeting has already been received from several overseas technical organizations and a full program is already assured. Dr. Staveley revealed that the American Society for Testing Materials is also planning an International Meeting a week before or after that of the Rubber Division, and that it would also probably be held in or near Cleveland.

Both Dr. Cramer and Dr. Staveley issued pleas for better cooperation in the matter of preparing technical papers for presentation at the division meetings. It was pointed out that only 19 papers were prepared for the Atlantic City meeting, as against the usual 30-odd generally heard. Before turning over the gavel to his successor, Dr. Cramer thanked the officers and members who had worked with him during his tenure as chairman, particularly Mr. Haynes, the hard-working division secretary.



F. W. Stavely
Newly Elected Rubber Division Chairman

450 Attend Division Banquet

The usual divisional banquet was held at the Haddon Hall Hotel on the evening of September 22, with approximately 450 in attendance. After an excellent dinner, an official welcome to the 55th meeting of the division was voiced by Chairman Cramer, who expressed special thanks to the Local Arrangements Committee, which included L. K. Youse (U. S. Rubber), W. B. Munroe (Linear), R. A. Kurtz (DuPont), and F. M. Galloway (Quaker Rubber). The banquet was honored by the presence of Dr. Linus Pauling, president of the American Chemical Society, who rendered a brief, humorous address. An excellent variety show was the concluding feature of the banquet.

Other highlites of the meeting included a special ladies program, which featured a luncheon on September 22 through the compliments of the Rubber Division, and a bridge tournament later the same day. J. H. Fielding, the newly-elected vice-chairman of the Division, appeared on the Voice of America radio program during the meeting and gave a short history of the development and current status of cold rubber.

Chemical Engineers to Meet

Three technical symposia and two panel discussions will be featured highlights in the technical program to be presented at the 1949 annual meeting of the American Institute of Chemical Engineers to be held in Pittsburgh, Penna., December 4 to 7, inclusive. The subjects to be discussed are of timely significance and special interest to chemical engineers and technical men in general. These discussions will be conducted concurrently with the technical papers sessions. The program committee is headed by Dr. James Coull of the University of Pittsburgh.

Rubber Igloos For Air Force

Huge rubber igloos big enough to cover a 10 room house are being manufactured by the Firestone Tire & Rubber Co. to house ground radar installations of the Air Force. Known as "Radomes," these balloon-like shelters are 53 feet in diameter, 35 feet high and have no internal structural supports, being held up by air pressure only. For this reason they are said to be ideal for the housing of large radar antennae. Since the rubber fabric is held up by only a few pounds of air pressure, it can be inflated with ordinary air compressors. The igloo is made of 2,000 yards of rubber-coated glass fabric which folds into a 1,600 pound packet small enough to be carried by a pick-up truck. To make the Radome shelter completely airtight and leakproof, the weatherproof fabric anchors into an aluminum ring on the ground that is 157 feet in circumference. Entrance to the igloo is through an underground passageway with special air lock compartments and doors. So strong is the beamless balloon building that it can support a three-ton load of snow and ice and can withstand winds up to 100 miles an hour. Utilizing a revolutionary concept of building, that is, support by air pressure instead of pillars, posts or arches, the balloon building can be inflated with an ordinary household vacuum cleaner. In wintertime, the thin rubberized cloth can be wired for electrical heating. Cool air can be used to hold up the igloo in the summer to make the interior comfortably air conditioned.

Hi-Miler Xtra Tred Tire

Goodyear Tire & Rubber Co., Akron, Ohio, has developed an improved version of the Hi-Miler Xtra Tred tire. The new tire, according to its designers, retains all of the long wearing qualities offered by its predecessor of the same name, estimated to be as much as 50% above that of regular truck tires. Compared with other heavy tread tires, the company states, the new tire has as much as 60% more anti-skid effectiveness. Improvements in the new tire include an exceptionally deep non-skid surface, plus a tread contour that is wider and flatter. The tread has a non-skid design of zig-zag grooves and notches that supply a multitude of road gripping edges. The latter is an important factor in preventing "jackknifing" of a heavy vehicle, it is explained. The new tire utilizes either rayon or nylon cord, and is made with all natural rubber. Sizes of the tire range from 8.25 through 11.00.

Additional Rubber Road Tests

Ohio State highway officials have announced that two test rubber strips 300-feet long will be put down on the streets of Columbus. The sample strips will each include more than 400 pounds and will be 12 feet wide, officials said. The rubber roads will be studied as to their durability and non-skid qualities. The highway officials noted that the project is costly because of the high price of rubber and added that it will take years of testing to determine whether rubber roads are economical.

Columbia Chemical Names Bald

Arthur E. Bald, Jr.

Columbia Chemical Division of the Pittsburgh Plate Glass Co., Pittsburgh, Penna., has appointed Arthur E. Bald, Jr., as technical representative for the sale of rubber pigments. Mr. Bald formerly was associated with Enjay, Inc., specializing in butyl and nitrile rubbers. He was assigned for two years in research on butyl inner tubes at the Armstrong Rubber Co. plant at West Haven, Conn. A graduate of Bucknell University with a B. S. degree in chemical engineering. Mr. Bald is an active member of the American Chemical Society, Division of Rubber Chemistry, and the Akron Rubber Group. Mr. Bald will be located at the Philadelphia district sales office of the division, 1410 Packard Building, Philadelphia 2, Penna., and will specialize in the application of Columbia's Calcene T, Silene EF, and the new pigment Hi-Sil. in the Eastern Seaboard States.

Seiberling Combines Departments

Seiberling Rubber Co., Akron 9, Ohio, has consolidated its advertising and merchandising departments, and has named a new manager and assistant manager to head the combined operation. J. A. Fouche, who had been assistant to G. F. Weisenbach, director of advertising and merchandising, has been named manager of the new department. John H. Fogarty, formerly advertising manager, has been named assistant manager. Mr. Weisenbach, associated with Seiberling since 1942, resigned his position with the company recently. Mr. Fouche joined the company in 1945 after previous service with the Firestone Tire & Rubber Co. and the General Tire & Rubber Co. He was manager of diversified product sales before his appointment as Mr. Weisenbach's assistant. Mr. Fogarty, who came to Seiberling in 1947 from the Firestone Tire & Rubber Co., has been advertising manager since December, 1948. Before that he had been in charge of the company's merchandising publication.

Binney & Smith Officials Abroad

Several officials of the Binney & Smith Co., New York, N. Y., are now in Europe visiting foreign customers and surveying continental rubber, paint and ink industries. Norman Lee Smith, vice-president of the company, is visiting company offices in London and Paris, and company representatives in Holland, Italy and Germany. Edwin B. Brooks, manager of Binney & Smith International, export division of the parent company, is also visiting principal offices of the company abroad, and will call on customers in the rubber, paint and ink industries in Portgual, Spain, Italy, France, Switzerland, Belgium, England, Holland, Germany, Denmark and Sweden. L. J. Venuto, research director for the company, will make a detailed survey of the ink and paint industries abroad during the next few weeks. His study will take him to many plants on the continent.

Pioneer Rubber Names Claussen

Richard A. Claussen has been appointed technical superintendent of the Pittsburg, Calif., factory of Pioneer Rubber Mills, San Francisco 11, Calif. Mr. Claussen graduated as a chemical engineer from the University of Michigan in 1927 and later received his M. S. from the University of Iowa. During the period from 1934 to 1945, Mr. Claussen worked for the Goodyear Tire & Rubber Co. at Akron, Ohio. During that time he engaged in executive supervision in the Development and Compounding Department. In 1945, Mr. Claussen transferred affiliations to the General Tire & Rubber Co., Wabash, Ind., where he was placed in charge of developing and operating the Vee Belt Department, and was later assigned the position of manager of the New Products Laboratory.

Faultless Elects Officers

At a meeting held on September 30, the board of directors of the Faultless Rubber Co., Ashland, Ohio, elected the following officers: *President*, T. W. Miller, Jr.; *Vice-President in Charge of Sales*, Western Wiles; *Secretary-Treasurer*, George A. Meiler; *Assistant Treasurer*, Z. T. Wile; *Assistant Secretary*, R. C. Johnson. At a stockholders' meeting held prior to the election of officers, the following directors were elected: N. R. Duell, C. D. Hubler, W. A. McAfee, G. A. Meiler, T. W. Miller, Jr., J. C. Myers, W. Wiles. After more than 41 years of service with the company, Z. T. Wile, former director, retired, and was not a candidate for re-election as a director.

Thiurams in Grain Form

The DuPont Rubber Chemicals Division, Wilmington 98, Delaware, has announced that both Thiuram M and Thiuram E are now available in grain form. In the grain form, these materials are free flowing, and easy to weigh and handle. Both feature non-dusting properties. Samples of these latest grain additions are available from the company on request.

An index to Volume 65 of RUBBER AGE will be found on Pages 113 to 116 of this issue.

COMMERCE DEPARTMENT RELEASES FIRST ANNUAL RUBBER REPORT

Use of synthetic rubber by American manufacturers in 1948 was substantially lower than in 1947, though still above statutory requirements, Secretary of Commerce Charles Sawyer stated in the first annual report on the administration of his responsibilities under the Rubber Act of 1948. This first report on rubber reviews the history of the war-born synthetic rubber industry in this country and the reasons for the current legislation setting specified production and consumption minimums.

It provides detailed information on the policies and controls established by the Department of Commerce and their administration during the 12-month period ending March 31, 1949. Also included are numerous tables showing production, consumption and stocks of all types of rubber, both during and after the war, and manufacturers' production and shipments of motor vehicle tires.

The report explains that during the war military needs for rubber products had first call and production of civilian items was curtailed sharply. Thus, a sizable backlog demand developed causing a need for rubber products greatly in excess of any pre-war market. The peak of this demand was satisfied in 1947, when 1,122,000 long tons of new rubber were consumed. At present, demand for rubber goods remains about 71% above 1939, the last normal prewar year. Current estimates place United States new rubber needs in 1949 at 1,010 000 long tons and most recent estimates for the near-term future, based on normal business conditions, place our needs at between 900,000 and 1,100,000 long tons of new rubber a year.

Allocation Order R-1

Rubber Order R-1, recently termed Allocation Order R-1, is the vehicle through which controls have been issued to the rubber manufacturing industry. Two main factors determine revisions in the Order: (1) changes in national security requirements, and (2) technical hardship. Before changes are made technical advice is received by the Department from technical subcommittees of the Rubber Industry Advisory Committee. These subcommittees consist of representatives of the various recognized segments of the industry. The main committee meets with the Department to advise it in developing workable control policies.

The report states that because of the frequent changes in the rate at which natural rubber is tapped and marketed in the Far East, the supply picture requires constant review. Reports from the consuming industry reveal the trend of demand for rubber products. From such information, the rate of production of synthetic rubber is determined. Appeals from Allocation Order R-1 have been few during the year under review and no formal action arising out of failure to comply with the order was necessary.

The national rubber program involves many Government agencies and interagency committees have been formed to coordinate their various activities. The report states that the Department has at all times forcefully supported the national security aspects of the Rubber Act and the development of a practical and effective domestic rubber program has been the major objective.

Future Rubber Capacities

Due to political and social unrest in the natural rubber-producing areas of the Far East, estimates of future production and of potential capacity must remain uncertain, the report states. It is generally accepted that the current Malayan annual production of 700,000 long tons of natural rubber is close to potential capacity. On the other hand, conditions in Indonesia and Indochina especially have prevented the recovery of production to anywhere near potential capacity. Their capacities are generally judged to be in excess of 800,000 and 80,000 long tons respectively. Recent developments in China proper may indirectly influence the future future supplies of natural rubber from the Far East.

If full production of natural rubber were possible in the future, a tentative world-wide annual total tonnage of 2,-125,000 long tons is conceivable. If currently projected world demand for new rubber material is sustained, any deficits that may appear between such demand figure and the supply of natural rubber are capable of being largely met by production of synthetic rubbers and reclaimed rubber.

On the other hand, world production of natural rubber might increase sufficiently or world demand for new rubber decrease to such an extent that the tonnage of synthetic rubbers necessary to balance supply with demand would be less than the minimum of 221,657 long tons specified in the Rubber Act of 1948. Under such conditions, the maintenance of consumption at this minimum level may require continuing legislation in order to assure national security, the report concludes.

Huber Aromex HAF Black

The Industrial Products Division of J. M. Huber Corp., New York 17, N. Y., has announced the availability of Aromex HAF Black, a highly reinforcing fine particle size furnace black particularly suited for cold rubber tire treads. For natural rubber treads, the company recommends the use of Aromex blended 50/50 with Wyex (EPC) to minimize scorchiness while maintaining high abrasion resistance.

GOODRICH CONSTRUCTS SYNTHETIC RUBBER BOAT FOR COAST GUARD

A new 12-man rubber "abandon ship" boat that weighs only 186 pounds complete with emergency equipment has been constructed by the B. F. Goodrich Co. to augment the life-saving facilities of the United States Coast Guard. In addition to the 12 men inside the boat, the craft has sufficient buoyancy for 13 other men to cling to lifelines hanging over the side. Constructed of synthetic rubber, the portable boat measures 14 feet long by 6 feet wide and folds into a package only 4 feet long and 2 feet wide. The unit is in volume production for the Coast Guard at the company's Akron, Ohio, plant. In addition, the U. S. Navy is considering using these rubber boats aboard destroyers in an effort to lighten their loads.

In use, the abandon-ship boat is thrown overboard and a ripcord pulled. The waterproof zippered cover unzips itself and pops off, whereupon the boat unfolds, inflates itself from gas cylinders and opens right side up in the water—all within 30 seconds. It draws only a few inches of water. Two pounds of air in the twin compartmented rubber tubes provide sufficient buoyancy to keep 25 men afloat. The new craft also has two inflatable floor partitions, each 6 feet square, which can be tossed into the sea as life preservers for 8 to 10 additional men. A tent-like 7 x 11 foot nylon canopy is furnished for protection against the elements and also to catch rainwater. Food and water rations, paddles, first aid equipment, fishing kits, and other emergency paraphernalia are included within the rubber boat.

NAMES IN THE NEWS

ROBERT B. REYNOLDS, formerly sales representative for the Taylor Instrument Companies at San Francisco, Calif., has been appointed assistant manager of the company's Chicago, Ill., office.

T. TYLER SWEENY, vice-president and a director of E. H. Rollins & Sons, New York, N. Y., has been elected a director of the Seiberling Rubber Co., succeeding WARREN H. SNOW, who resigned recently.

C. BENSON BRANCH, previously in charge of the Coatings and Raw Materials Section of the Plastics Division of the Dow Chemical Co., has been named manager of the company's Technical Service and Development Division.

DWIGHT R. G. PALMER, president of the General Cable Corp., was tendered a dinner on September 26 at the Waldorf Astoria Hotel in New York City by the National Conference of Christians and Jews in recognition of his work in helping solve intergroup problems in industry and in the armed forces.

HARRY E. HEILIGENTHAL, formerly director of research for the C. H. Gougler Machine Co., is now plant manager for the Castle Rubber Co. at East Butler, Penna.

FRANCIS F. LUCAS, long a member of the technical staff of the Bell Telephone Laboratories in New York City, and an outstanding authority in the field of metallography and metallographic testing, has retired. He resides in East Orange, N. J.

C. B. HAWLEY, formerly associated with the Alphaduct Wire & Cable Co. and the General Cable Corp., has been appointed plant manager of J. M. White, Inc., Philadelphia 33, Penna.

ARTHUR SURKAMP, vice-president of the U. S. Rubber Co., will serve as chairman of the Rubber Division for the 1949 fund drive of the Travelers Aid Society of New York.

GILBERT MACINTOSH, for the past 13 years associated with P. B. Cow & Co., Ltd., London, England, most recently as chief buyer, has resigned his position with that company.

L. W. CLARKE, vice-president in charge of sales for the Philip Carey Mfg. Co., has been elected a member of the board of directors of the company.

DR. L. P. MOORE, former European technical representative for the American Cyanamid Co., New York 20, N. Y., has been appointed manager of the New Products Development Department. DR. E. W. COOK, previously assistant chemical director of the company, succeeded DR. MOORE as European representative.

LEONARD H. COHAN, formerly research director of the Witco Chemical Co., is now associated with Hanline Bros., paint manufacturers, in Baltimore, Md.

DR. NICOL H. SMITH, formerly director of the division of chemical engineering and physics of the Franklin Instittte Laboratories for Research and Development, Philadelphia, Penna., has been appointed director of research operations of the Laboratories.

JOHN S. COLLBRAN, JR., who has been with the Los Angeles and more lately the San Francisco office of the New Jersey Zinc Sales Co., has been transferred to the Chicago office as assistant district sales manager.

JOHN H. HANNA, until recently associated with the Bechtel Corp., has joined the Pioneer Rubber Mills as manager of the engineering department at the Pittsburgh, Calif., factory.

JOSEPH STEINSIK, associated with the St. Louis, Mo., plant of the General Cable Corp. for the past few years, has been named purchasing agent at that plant, succeeding S. W. GABRIEL, who has received another assignment.

ROBERT G. BAUMANN, former assistant sales manager of silicone products for the General Electric Co., Pittsfield, Mass., has been named sales manager. He succeeds JAMES W. REYNOLDS, who has been appointed assistant manager of the company's chemicals division.

HENRY A. HAAS, associated with Kraft system sales of the General Tire & Rubber Co. since 1940, has been named manager of Kraft service and accessory sales, succeeding the late S. S. BERRY.

OTTO C. PAHLINE, former head of the Flooring Department of the Goodyear Tire & Rubber Co., has joined the Flooring Department of Interchemical Corp., New York, N. Y., as midwest representative.

J. O. HORNING, JR., associated with the Goodyear Tire & Rubber Co. since 1943, has been appointed manager of the firm's Technical Service Department in Lima, Peru.

K. B. CARY, former sales representative for the Rubber Sales Division of Sharples Chemicals Inc., New York 1, N. Y., has joined the Burgess Pigment Co., Paterson 1, N. J., to handle the sale of pigments to the rubber and plastic industries.

DAVID C. MINTON, JR., assistant to the director of Battelle Memorial Institute, has been named executive in charge of sponsor relations and projects development.

Phillips Moves Pilot Plant

Pilot plant operations which have been conducted since 1939 at the Phillips Petroleum Co. plant in Hamilton, Okla., are being moved to the new "66" proving station, west of Bartlesville, Okla. The Hamilton plant was the first Phillips natural gasoline plant, completed in November, 1917, with an original capacity of 350-gallons a day extracted by a compression-type process. The plant marked the beginning of the company's natural gasoline production, which reached 1,000,000 gallons a day in 1948. Natural gasoline operations were discontinued at Hamilton in 1926, and the site was later adapted for the pilot plant testing of new processes. Many Phillips processes were tested at Hamilton, including certain phases in the production of butadiene. Butadiene is now produced in large quantities by Phillips at the Government-owned Plains Plant, near Borger, Texas. The pilot plant move was expected to be completed by the middle of October, and will complete the centralization of all pilot plants in the Oklahoma area. Larger scale pilot plant projects will continue at the Philtex Experiment Station at Phillips, Texas.

Hold Second Cords Auction

By order of the United States District Court for the District of New Jersey, the entire assets of Cords, Ltd., 780 Frelinghuysen Avenue, Newark, N. J., were offered for sale on October 7. The court had originally approved an auction held on June 15 under the company's petition for reorganization. Bids accepted at this sale, however, were not approved by the court. Cords then filed a petition of bankruptcy, and under this action the court approved the sale of October 7. S. Arthur Stern, 17 Academy Street, Newark, N. J., acted as receiver in the action. The auctioneer was John A. O'Grady, 15 Exchange Place, Jersey City 2, N. J. The sale included such items as molding machinery, presses, strippers, dies, cutters, etc. Also offered were tool room machinery, wire mill equipment and supplies, as well as office furniture and cafeteria equipment.

Elected O'Sullivan President

Victor A. Catozella has been elected president and a director of the O'Sullivan Rubber Corp., Winchester, Va., succeeding R. J. Funkhouser, present chairman of the board who recently resigned as president. Mr. Catozella is a director of the Victor Products Corp., and has been associated with Reynolds & Co., investment bankers, for seven years. A. C. Halvosa, vice-president in charge of sales, has been elected a director of the organization.

Forms Stanark Rubber, Inc.

R. R. Stark, formerly associated with the Channel Paint Co., Hopkins, Minn., has formed Stanark Rubber, Inc., 3801 Fifth St., N. E., Minneapolis 21, Minn., for the manufacture of rubber, plastic and paint products. The company will specialize in the production of inside and outside corners, cove base molding and a new interlocking suction tile.

CASING PRODUCTION IN JULY DROPS 15% FROM JUNE TOTALS

Production of automotive casings of all types in July amounted to 6,263,676 units, a drop of 15.26% from the 7,391,867 casings produced in June, according to a recent report of the Rubber Manufacturers Association. A total of 5,507,334 passenger car casings were produced in July, 14.89% less than the 6,470,724 casings produced in June. Truck and bus casings produced during July totaled 756,342 units, a drop of 17.89% from the 921,143 truck and bus casings produced in June.

A total of 7,693,978 casings of all types were shipped in July, of which 6,975,517 were passenger type and 898,461 truck and bus casings. These figures compare with the previous month's shipment of 7,535,239 casings, of which 6,598,518 were passenger casings and 936,721 were truck and bus casings.

There was a total of 11,716,755 casings of all types on hand at the end of July, compared with 13,133,816 casings on hand as of June 30, 1949. Of the July total, 9,335,979 were passenger casings and 2,380,776 were truck and bus casings. At the end of June, 10,618,442 passenger car casings and 2,515,374 truck and bus casings were on hand.

Passenger and truck and bus tubes produced during July amounted to 5,230,075 units, against the 6,430,026 tubes produced in June. In July, 6,299,602 tubes were shipped, compared with 6,409,215 tubes shipped the month before. At the end of July, there were 11,364,436 tubes on hand, contrasted with 12,465,760 tubes on hand as of June 30, 1949.

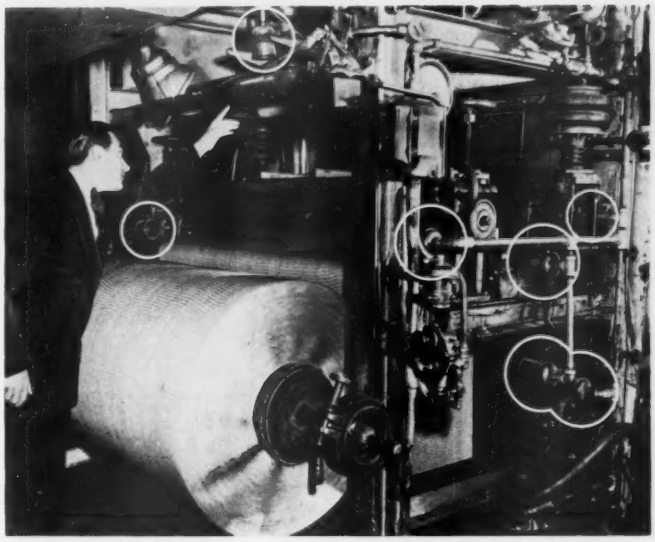
Enlarge Alkyl Amine Facilities

A substantial enlargement of its production facilities for alkyl amines has been completed by the Carbide and Carbon Chemicals Corp., New York 17, N. Y. Initial production of three ethyl amines—monoethyl, diethyl and triethyl amines—and diisopropyl amine has already been made. At the same time, larger quantities of other alkyl amines produced by Carbide will soon be available. The latter include mono- and di (n-butyl) amines, mono- and di (2-ethylhexyl) amines, and monoisopropyl amine. Several of the alkyl amines are raw materials for further synthesis by Carbide or their long list of nitrogen compounds. One of these, diethylethanolamine, will be available in greatly increased quantities. Diethylamine, as well as the n-butyl, 2-ethylhexyl and monoisopropyl amines, are immediately available in tank car quantities. Production of the other amines, monoethylamine, triethylamine, and diisopropylamine, will be increased to tank car quantities within the next few weeks.

Vote to Continue Rubber Study

The board of directors of the University of Akron, Akron, Ohio, have approved a contract to continue rubber research for another year at the Government laboratories in Akron. Members voted to extend an expiring five-year contract through July 30, 1950. The laboratory, operated under university supervision, has an annual budget of $1,066,000.

TIRE FABRIC IMPREGNATING MACHINE HAS BUILT-IN FIRE PROTECTION



The Firestone Tire & Rubber Co., Akron, Ohio, recently installed an automatic carbon dioxide fire extinguishing system on a large rubber-impregnating machine used to manufacture nylon tire fabric. The installation was designed and made to order by fire protection engineers of Walter Kidde & Co., Belleville, N. J. As the rubber cement used to impregnate the 60-inch wide nylon fabric, moving at 10 feet per minute, contains a large percentage of highly flammable solvent, a built-in extinguishing system was selected as the only adequate means of safe fire protection for the processing equipment and operating personnel.

Twenty Multijet discharge nozzles, located at hazard points throughout the machinery, are connected by rigid piping to a manifold of four 50-pound cylinders of liquid carbon dioxide, stored under pressure. Two heat actuators, one at each end of the machine, work on the rate-of-temperature-rise-principle to detect fire almost instantly. The actuators are connected by tubing to a special pressure release mechanism which controls automatic discharge heads on the carbon dioxide storage cylinders. In case of fire, the Firestone nylon impregnating machine would be engulfed in a blanket of inert carbon dioxide gas which smothers fire by cutting off its oxygen.

The Kidde extinguishing system also has 4 pressure-operated trips to close duct dampers, automatic explosion-proof switch to cut off power to the electrically-driven machinery, and 2 remote control pull boxes for manual operation of the system as an added safety feature.

Retires From Wellington Sears

Nathan L. Hall, for 15 years in charge of sales to the rubber industry of hose and belting fabrics for the Wellington Sears Co., 65 Worth St., New York, N. Y., retired on September 30 after forty-two years of service with the firm. After his graduation from Harvard in 1907, Mr. Hall joined Wellington Sears. He served in a sales capacity in the Boston office until he was transferred in 1914 to London, England, where he represented the company until 1916. During World War I, he served as a captain in the U. S. Army, and saw two years of duty in France. Upon rejoining the company, Mr. Hall returned to London in 1920 and for the next fourteen years represented the firm in Europe. In 1934, he moved to the company's New York office to handle sales of special heavy industrial fabrics, principally hose, belting, tire fabrics and other textiles for the rubber trade, the position he held at the time of his retirement.

Flintkote No. 974 Cement

A new, multiple purpose adhesive of the synthetic rubber-resin type which provides a light translucent film has been developed by the Industrial Products Division of the Flintkote Co., 30 Rockefeller Plaza, New York 20, N. Y. Designated as Flintkote No. 974 Rubber Cement, this product is said to be especially adapted for use with impervious surface materials and to applications requiring high bonding strengths. Flintkote No. 974 Rubber Cement is suitable for various application methods such as cold bonding, hot bonding, and by reactivation of previously applied adhesive by use of a suitable solvent, followed by immediate combining. The bond is not affected by extreme or variable atmospheric temperatures, and heat resistance is excellent. The cement is supplied in a viscosity of 1,200 to 1,600 cps @ 77° F. and is recommended for bonding, in any combination, rubber, wood, canvas, aluminum, glass, phenolics, steel and felt.

G-E Establishes New Division

A new operating division to engineer, manufacture, and sell laminated plastics and insulating materials has been established as the third operating unit of the Chemical Department of the General Electric Co. The new division will be known as the Laminated and Insulating Products Division, with headquarters in Coshocton, Ohio. It will have responsibility for laminated and fabricated products manufactured in Coshocton and for insulating materials produced at Schenectady, N. Y. With the establishment of the third operating unit a triple shift in personnel has been announced. The Laminated and Insulating Products Division will be managed by Harry K. Collins, who has been manager of the Plastics Division. New manager of the latter unit, with headquarters in Pittsfield, Mass., is Herbert B. Brusman, formerly manager of the Employee Relations Division. Mr. Brusman's successor in the latter capacity is Arthur C. Treece, former manager of the plastics plants at Pittsfield and Coshocton and most recently assistant to the manager of the Plastics Division. The following staff has been announced for the new division: Dr. J. J. Pyle, engineering manager; A. B. Wellborn, manufacturing manager; E. G. Gray, sales manager; and J. A. Beals, accountant.

Tire Dealers Schedule Meeting

The 29th annual meeting of the National Association of Independent Tire Dealers will be held at Cincinnati, Ohio, on October 21 to November 2. The meeting will be marked by addresses of several tire executives, some of whose companies are defendants in a civil suit filed by the association charging price conspiracy. Among these executives will be Lee R. Jackson, president of the Firestone Tire & Rubber Co., who will talk on "Modern Merchandising in the Tire Business." Talks will also be given by J. P. Seiberling, president of the Seiberling Rubber Co., and Harry F. Webster, president of the Denman Rubber Co. William W. Marsh was recently named general manager of the N.A.I.T.D., which has its headquarters in Washington, D. C.

Fundamentals of Adhesion

An interesting paper on the "Fundamentals of Adhesion," prepared by G. M. Kline and F. W. Reinhart, of the National Bureau of Standards, Washington, D. C., was presented at the Wood Industries Conference of the American Society of Mechanical Engineers at Jamestown, N. Y., on September 27. Copies of the paper, which included an extensive bibliography on adhesion, can be secured from the National Bureau of Standards on request.

Germans Again Producing Synthetic

According to a recent press report from Berlin, Russia has authorized synthetic rubber factories in East Germany to resume production. Such production was previously banned by four-power agreement as a war potential. The report was credited to a spokesman in the Soviet Zone.

Butyl Tubing Available

Formerly obtainable only in large quantity lots, butyl rubber tubing may now be purchased in laboratory quantities from the Fisher Scientific Co., 717 Forbes Street, Pittsburgh, Penna. The tubing comes in two diameters, ¼ inch and 3/16 inch, both with ⅛ inch wall thickness. Recently published data indicates that butyl rubber tubing, used for connections in the Dumas apparatus for the determination of nitrogen, has about one-tenth the permeability to carbon dioxide as that of natural rubber. The effect with water vapor, although considerably smaller, is still measureable. Unlike certain plastic tubing, butyl is soft and flexible, and therefore fits snugly over glass fittings. It is also highly resistant to oxygen.

To Buy Anderson-Carlson Assets

Rome Cable Corp., Rome, N. Y., has exercised its option to buy the assets of the Anderson-Carlson Manufacturing Co., Torrence, Calif. Final arrangements in the transaction will be completed soon after the first of the new year. Rome will acquire the assets of Anderson-Carlson through an exchange of certain shares of Rome's common stock, and will assume Anderson-Carlson liabilities. Anderson-Carlson was incorporated in 1946 for the manufacture of electrical metallic tubing for the construction industry. Production started in October, 1948. Since that time Rome Cable has been selling the Anderson-Carlson output.

FINANCIAL NEWS

Pantasote Company

First Half: Net loss of $69,606, compared with a loss of $327,016 for the first half of the preceding year. Net sales for the first six months of 1949 totaled $2,087,097, against $2,136,949 for the period ended June 30, 1948.

Baldwin Rubber Co.

Year Ended June 30: Net profit of $854,100, which is equal to $2.17 a share, compared with $656,870, or $1.67 a share, for the preceding fiscal year.

Lea Fabrics, Inc.

Year to May 31: Net profit of $460,187, which is equal to $2.19 each on 209,820 shares, against $678,239, or $3.23 a share, for the previous fiscal year.

Faultless Rubber Co.

Year to June 30: Net income of $365,683, which is equal to $2.79 a share, compared with $448,439, or $3.43 a share, for the preceding fiscal year.

Proposes Rubber Ratio Rule

The Federal Trade Commission has proposed a draft rule which, if adopted, would fix a carload of 20,000 pounds as the maximum quantity for replacement rubber tires and tubes upon which differentials in price on account of quantity may be granted. The rule would not apply to tires and tubes sold for original equipment. The announcement was made in a notice directed to all manufacturers, distributors, dealers and other vendors or purchasers of replacement rubber and synthetic rubber tires and tubes, setting November 18 as deadline for presentation of views concerning the tentative rule. Interested parties may propose a substitute or alternative rule or may support or oppose the establishment of any rule. They may also request to be heard orally. Authority for the proceeding is contained in the so-called quantity limit proviso of Section 2(A) of the Robinson Patman Anti-Discrimination Act. Investigation of the tire industry was undertaken after Congress and the commission received complaints from small tire dealers that they were being injured because manufacturers were charging them higher prices than they were exacting from large buyers.

Form Artcraft Rubber Products

Artcraft Rubber Products, 426 Jefferson Avenue, Pottstown, Penna., was recently incorporated under the laws of the State of Pennsylvania, with the main objective of assisting industrial engineers in the development of natural and synthetic rubber parts requiring close tolerances and rigid specifications. Ralph B. Davis, president of the organization, was formerly associated with MacEwan & Smith, Inc., Doylestown, Penna., as general manager. H. W. Matthews, secretary and treasurer of the new firm, is general manager of the Turbo Machine Co., Lansdale, Penna. D. M. Achenbach, is office manager of Artcraft Rubber.

Safety Award For General

The Baytown, Texas, factory of the General Tire & Rubber Co. has been presented the highest award of the National Safety Council for working 1,200,000 manhours without a lost-time accident. The "distinguished service to safety" award was made to L. E. Lyman, Baytown general manager, and Ken Kitchel, safety engineer. David M. Wood, president of the Gulf Coast chapter of the American Society of Safety Engineers, represented the Council. Mr. Lyman said the Baytown plant established a record of 540 accident-free days.

Rubberset Sells Newark Plant

Rubberset Co. has sold its former main factory at 56 Ferris St., Newark, N. J., to the Ferry Realty Co. The Rubberset concern has established its executive offices and principal manufacturing facilities in the plant at Haynes Avenue and Route 1, Newark, which it recently purchased from the Westinghouse Electric & Manufacturing Co.

Corrosion Resisting Coating

Polytechnic Institute of Brooklyn, Brooklyn 2, N. Y., in conjunction with the Carboline Co., St. Louis 5, Mo., has developed a new type of corrosion resisting resin coating called B Resin Solution. It is made for application at room temperature, requires no mixing and is flexible when dry. Among the advantages claimed for this coating over polyvinyl chloride and chlorinated rubber coatings are its resistance to acids of higher concentrations, resistance to higher liquid temperatures (180-200° F.), and resistance to such solvents as the alcohols and straight chain chlorinated and aromatic hydrocarbons. The new B Resin Solution is a semi-thermoplastic, semi-thermosetting ready mixed resin, the molecular chain length of which slowly increases with age in the deposited film. Since no plasticizing agent is added to obtain flexibility, there is no plasticizer to "migrate" or leach out in corrosive service. A limited quantity of the product is available at no charge from the Carboline Co., 7603 Forsythe Blvd., St. Louis 5, Mo., for experimental and test purposes to those who will give information on its application.

Peace Named Johnson Steel Head

George E. Peace, formerly vice-president of the Johnson Steel & Wire Co., Akron, Ohio, has been elected president of the company, succeeding Charles D. Johnson, who resigned. Bernard Johnson, vice-president of the company and a brother of Charles Johnson, also resigned in a shift of top management. Mr. Peace had been manager of the Akron plant since 1937. This position is now filled by his son, William D. Peace. Johnson Steel was purchased by the Pittsburgh Steel Co. three years ago. While a subsidiary of Pittsburgh, it continues to operate as a separate company. Other than Akron, the company maintains plants in Los Angeles, Calif., and Worcester, Mass.

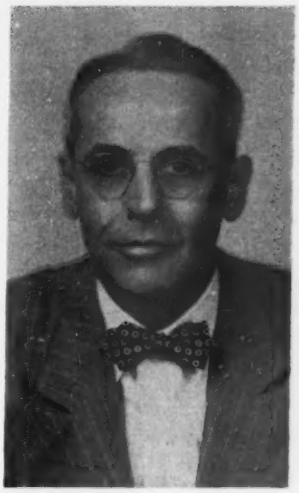
Le Person Returns to France

Georges Le Person, commercial director of the chemical products department of Compagnie Centrale Rousselot, Paris, France, has returned to France after an extensive visit to the United States. M. Le Person visited numerous rubber factories during his visit in this country and contacted many of the leading suppliers of rubber chemicals and compounding ingredients. He was well satisfied with the results of his visit and has asked us to express his appreciation for the courtesies shown him on all occasions. In addition to his other duties, M. Le Person is also president of the Section of Carbon Black Sellers in France.

Rubber & Asbestos Corp. Moves

Rubber & Asbestos Corp., formerly located in Jersey City, N. J., have moved their general offices and factory to 225 Belleville Avenue, Bloomfield, N. J. The new telephone number is Bloomfield 2-1300. The New York telephone number is Rector 2-6121.

Welch Joins Olin Laboratories



Don M. Welch

Don M. Welch has joined the staff of the R. R. Olin Laboratories of Akron, Ohio, as a consulting rubber technologist. Mr. Welch was graduated from Ashland University in 1927 with a B. A. degree in chemistry. He supplemented this training with different courses at Maryland, Rutgers and Princeton Universities. Since graduation from college he has been associated with many different rubber companies as a rubber technologist. Some of these companies are: Mansfield Tire & Rubber Co., Rubber Division of the Thermoid Co., Sun Rubber Co., Bearfoot Sole Co., O'Sullivan Rubber Co., and others.

U. S. Rubber Textile Laboratory

Winnsboro Mills, Winnsboro, S. C., a subsidiary of the U. S. Rubber Co., has construction under way on a $250,000 development laboratory. The new laboratory will permit the consolidation of research and development work of the Textile Division of U. S. Rubber. The laboratory will employ approximately 60 persons. Dr. S. H. Sherman, manager of the Development Department of the Textile Division, will be in charge, moving his headquarters from Hogansville, Ga., to Winnsboro.

Additional Indonex Reports

Two additional technical reports on the application of Indonex plasticizers were recently made available by the Indoil Chemical Co., 910 South Michigan Ave., Chicago 80, Ill. These covered the use of Indonex in semi-ebonite compounds (Circular No. 13-35) and in wire and cable jacket compounds (Circular No. 13-34). Copies of the reports are available from the company on request.

An index to Volume 65 of RUBBER AGE will be found on Pages 113 to 116 of this issue.

Davis Named Goodyear Lecturer

C. C. Davis, chief chemist of the Boston Woven Hose & Rubber Co., Cambridge 39, Mass., has been named the Charles Goodyear Lecturer for 1950 by the Rubber Division of the American Chemical Society. A graduate of both Dartmouth College and the Massachusetts Institute of Technology, Dr. Davis received his B. A. degree from the former in 1911 and his B. S. degree in 1914 from the latter. He has been associated with Boston Woven Hose since 1914, since 1925 as chief chemist. Dr. Davis is known for his years of service as editor of *Rubber Chemistry and Technology*, and as assistant editor of *Chemical Abstracts*. He also co-edited the ACS monograph "The Chemistry and Technology of Rubber," and is the co-editor of a new ACS monograph on synthetic rubber, soon to be published. He is a member of the executive committee of the Rubber Division and of its Bibliography Committee. During the war years Dr. Davis served as consultant to the War Production Board and the Civilian Production Administration.

Changes at Advance Solvents

Advance Solvents & Chemicals Corp., New York 16, N. Y., has announced several personnel changes in a move to increase company service and efficiency. Jesse S. Young has been appointed to the newly-created post of assistant to the president, supervising eastern sales. Charles Gardner has been appointed eastern field sales manager under the supervision of Mr. Young. The New York sales organization has been expanded to include W. C. Tucker, formerly with Lehman and Verace of New York, N. Y., R. L. Kriney, formerly associated with the Technical Service Laboratory of Advance Solvents, has been appointed sales engineer to the plastics industries.

Changes Product Trade Name

Marketed for several years under the familiar trade name "Swansdown Brand," general-purpose dense precipitated calcium carbonates manufactured by the Diamond Alkali Co., Cleveland, Ohio, will now be sold under a new name, "Non-Fer-Al Brand," according to a recent announcement by the company. In announcing this change, company officials stated that the new name had been selected and adopted because the company feels "Non-Fer-Al" describes more accurately the low iron and aluminum content dense precipitated calcium carbonates produced by Diamond.

Bauer & Black Industrial Tape

Bauer & Black Division of the Kendall Co., Chicago 16, Ill., has announced that effective October 1, 1949, the line of industrial tapes produced by the organization will be known as "Polyken" Industrial Tape. The change was made to establish a clearer distinction between Bauer & Black's surgical dressings business and its industrial tape program, which utilizes entirely separate sales and distributor organizations.

Chicago Plans Future Meetings

The Chicago Rubber Group will hold the first meeting of the 1950 season on November 4 at the Morrison Hotel, Chicago, Ill. Speaker for the evening will be C. W. Tyson of the Standard Oil Development Co. who will speak on "Synthetic Fuels." An added feature for the evening will be a short colored film entitled "Famous Fairways" showing some good action shots of golfers on some of the most beautiful but difficult courses in the country. The group will hold its Christmas Party on December 16 at the Morrison Hotel. Subsequent meetings are scheduled for February 17 and May 12. J. Frank Taylor, of the Commercial Solvents Corp., 1817 West Fullerton Ave., Chicago, Ill., has succeeded Maurice O'Conner as secretary-treasurer of the group. Mr. O'Conner changed his employment recently and moved from the Chicago area.

International Latex Day

One of the major activities of the various rubber producers' research organizations in Great Britain, England and France covers the application of latex in industrial processes. To acquaint industrialists with the work of these organizations insofar as latex is concerned, an International Latex Day will be held in Brussels, Belgium, on October 19. The meeting will be held under the auspices of the British Rubber Producers' Research Association, the British Rubber Development Board, the Rubber-Stichting, and the Institut Francais du Caoutchouc. Papers presented at the meeting will cover the constitution and properties of latex, the manufacture of molded articles, production of latex foam sponge, and the industrial applications of Positex. Demonstrations of actual processes will be made.

Forms Public Relations Service

M. Adolph Heikkila, until recently associated with the New Jersey Zinc Co., New York, N. Y., has formed a public relations consulting service at 35-15 91st Street, Jackson Heights, L. I., N. Y. Prior to his association with New Jersey Zinc, where he directed public relations activities in connection with luminescent pigments and other new products, Mr. Heikkila owned and operated his own industrial advertising agency for 10 years. Previously, he had been associated with Johns-Manville Corp., the old Vacuum-Oil Co., and the Trade Division of the Butterick Publishing Co.

Southern Ohio Fall Meeting

The Fall Meeting of the Southern Ohio Rubber Group has been scheduled for October 27 at the Engineer's Club in Dayton, Ohio. The meeting will be addressed by Colonel G. W. Goddard, Chief, Photographic Division, U. S. Air Force. Colonel Goddard will talk on military photography, and will include 20 minutes of slides on the bombing of Europe and "third dimensional" bombing of Berlin. Dinner will be served prior to the address.

Cotton Crop Supports

The Department of Agriculture has reported that the final cost of Government support for last year's cotton prices came to about $600,000,000. The Department lent money on 5,271,000 bales, but only 1,478,000 were redeemed by the borrowers. Thus, the Government is left holding nearly 3,800,000 bales, with the deadline for making repayments on loans passed. The Department also reported that "thousands of bales" of cotton from the 1949 crop are being threatened by boll weevils in Virginia, the Carolinas, Georgia, Alabama, Mississippi, Tennessee, Arkansas, Texas, and Oklahoma. Government experts say there is still time to avert most of this damage with insecticides, but they complain that many growers are being lax in these precautions.

N. Y. Group Plans Fall Meeting

The fall meeting of the New York Rubber Group will be held on October 21, at the Henry Hudson Hotel in New York City. A technical meeting has been scheduled at 4:00 P.M. to consist of three papers: "The Importance of Rubber in Southeast Asia", by H. B. Egmont Hake, director of the British Rubber Development Board and former Chairman of the Rubber Growers' Association; "Trends in the Production and Consumption of Hevea Latex," by Paul Stamberger, and a paper on plastics. The technical session will be followed by a cocktail hour, dinner and entertainment.

R. I. Plans Election Meeting

An election of officers for the 1950 season will feature the November 17 meeting of the Rhode Island Rubber Group to be held at the Metacomet Golf Club, East Providence, R. I. Earl J. Smith of the Dow Corning Corp., Midland, Mich., will present a paper on "Silicon Material with Emphasis on Silastics," as the technical portion of the program.

Washington Group Plans Banquet

The twelfth regular meeting of the Washington Rubber Group will be held on October 24 at the Hamilton Hotel, Washington, D. C. Plans for the evening include the installation of officers elected on May 24. A technical session will not be held. Dinner will be served and entertainment provided the assembled members and their guests.

Connecticut Group Fall Meeting

The Connecticut Rubber Group has completed plans for its fall meeting to be held on November 4. At that time the members and guests of the troupe will make a tour through the plant of the Armstrong Tire Co. in West Haven, Conn.

Connecticut Holds Annual Outing

Approximately 100 members and guests attended the fourth annual outing of the Connecticut Rubber Group held on September 17 at Scollin's Grove, Park Lane, Long Hill, Conn. A softball tournament, horseshoes and an egg throwing contest featured the day's athletic activities. A team representing New Haven was declared the winner of the softball tournament after defeating the Peddlers and the Naugatuck teams. G. Anderson (Whitney Blake) won the horseshoes match. W. Platt (Pittsburgh Plate Glass) and C. Larson (Whitney Blake) teamed together to win the egg throwing contest. Luncheon and dinner were served and door prizes distributed to all. T. T. Skipp (Naugatuck Footwear) was chairman of the outing committee.

Genepol Polyester Resin A-20

General Tire & Rubber Co., Akron, Ohio, has developed Genepol Polyester Resin A-20, a straight unmodified polyester resin of the flexible type. Characterized by a low degree of molecular unsaturation, the resin features low exothermic heat of reaction and is highly fluid in nature. The product can be used for both casting and laminating applications, either alone or in conjunction with polyesters of the rigid type. Because Genepol A-20 is supplied in unmodified form, it must be mixed with styrene monomer before use. The ratio of styrene to polyester will determine the physical properties of the finished cured copolymer. High proportions of styrene will yield tough, hard products, while lower proportions will result in flexible soft materials, the manufacturer states.

Offer Technical Data Sheets

The chemical and physical properties of the various pigments manufactured and sold by the company are covered in a new series of technical data sheets recently made available by C. K. Williams & Co., Easton, Penna. Data is included on venetian reds, red iron oxides, pure yellow iron oxides, brown iron oxides, siennas and umbers, and metallic browns. Copies of the technical data sheets can be secured from the company on request.

Wise Allied in Receivership

According to information received from the National Credit Office, Inc., Wise Allied Products Co., Inc., manufacturers of bathing caps and other sundries of Ada, Ohio, has been placed in receivership. The company has been inactive for the past several months. Charles Collett has been named receiver.

Boston Sets 1950 Meetings

The Boston Rubber Group has announced its schedule of meetings for the 1950 season. The spring meeting of the group will be held on March 17, the fall meeting on October 20, and the Christmas meeting on December 15, all at the Somerset Hotel, Boston, Mass. The usual summer outing will be held on June 16.

Introduce Neoprene Type W

A new type of neoprene having important additional advantages over those currently manufactured by the DuPont Rubber Chemicals Division, Wilmington 98, Delaware, has been introduced. Called Neoprene Type W, the new polymer is said to be chemically quite similar to previous neoprenes, but its molecular structure has been modified in such a way that although it retains all the advantages offered by other types its mechanical properties are more nearly like those of natural rubber. The stability of the new polymer in the raw state is vastly superior to that of previous types of neoprene and it can be fabricated over a wider range of temperatures, showing much less tendency to stick to the milling rolls during processing operations. According to DuPont, it is now possible to produce vibration dampening devices with Neoprene Type W which not only are highly resistant to oils, heat, grease and sunlight, but which also exhibit as low permanent deformation as those made of natural rubber.

So-Lo Marx Elects Directors

Four directors were added to the board of the So-Lo Marx Rubber Co., at a recent meeting in Loveland, Ohio. The new directors are Charles Tooker, Dr. E. M. Davis, Arthur H. Morris and Willard Griggs. The former three are executives of the firm. The other directors include Joe J. Marx, president, Mrs. Evelyn M. Marx, Harold M. Baron and Irvin M. Bettman, Jr. Mrs. Marx is vice-president of the concern, while Mr. Tooker is treasurer. Mr. Marx revealed that the directors have approved a liberalized profit-sharing plan, wherein all employees with a year or more service participate. The firm already has paid $52,000 into the plan. The employees do not contribute to this fund.

Friction Materials Institute

The Friction Materials Standards Institute, Inc., has been organized under the Membership Corporations Law of the State of New York, for the purpose of continuing the publication of the *Data Book*, formerly published by the Brake Lining Manufacturers Association, now dissolved. The Institute will render technical service through the publication of data relating to detailed specifications of brakes and clutches, and by supplying engineering and other data. The officers of the new organization are: *President*, Amor P. Smith (Russell Manufacturing); *Vice-president*, Thomas L. Gatke (Gatke Corp.); *Treasurer*, William H. Dunn (Raybestos-Manhattan); *Secretary*, Harriet G. Duschek.

Columbia Chemical Anniversary

This year, the Columbia Chemical Division of the Pittsburgh Plate Glass Co., Pittsburgh 13, Penna., marks its golden anniversary. The company first began operations in 1899 with a plant at Barberton, Ohio. Since that time Columbia has produced vast quantities of alkalis and related products which, at some stage, have entered into the production of innumerable products essential to modern living.

Tollner Joins Industrial Rayon

Thomas H. Tollner

Thomas H. Tollner has joined the Tire Rayon Department of the Industrial Rayon Corp. as a sales representative with headquarters in Cleveland, Ohio. Mr. Tollner, a graduate of Fordham University in business administration, has spent his entire business career in the rayon industry, first as a member of the sales service staff at North American Rayon Corp., and since 1945 as New England sales representative of the American Bemberg Corp. at Providence, R. I. He is a member of the Textile Sales Association.

Unichrome Plastisol Compounds

The Organic Coatings Division of United Chromium, Inc., 51 East 42nd St., New York 17, N. Y., has developed a new line of rubber-like plastic materials named Unichrome Plastisol and Organosol Compounds. Advantages claimed for the compounds include outstanding resistance to a wide variety of chemicals and corrosives, excellent resistance to mechanical abuse such as abrasion, high dielectric strength, and easy handling. The compounds are delivered in paste-like form. The plastisols contain 100% solids, while the organosols contain a small percentage of liquid solvent or diluent. They can be molded or they can be applied as coatings to metal, fabric, or paper, by dipping, spraying, or brushing. Upon baking at a temperature of 350° F. for 20 to 30 minutes, the materials set and take on a rubber-like appearance. Coatings from .003-inch to .25-inch may be obtained with a single application. Unichrome Plastisols and Organosols find application on pipes, tanks, drums, protective clothing and process equipment subject to strong corrosives.

Powermatic Ventilator Co., of Cleveland, Ohio, makers of Iron Lung roof ventilators, intake units, and related items, has changed its name to the Iron Lung Ventilator Co.

An index to Volume 65 of RUBBER AGE will be found on Pages 113 to 116 of this issue.

Vinylite Coated Glass Hose

Holton Corp., New Orleans, La., has announced the manufacture of a flexible glass-cloth hose designed as an aid to irrigation in eliminating the labor and expense of digging irrigation ditches. The hose is made of cloth woven of Fiberglas yarns coated with Vinylite resins. A 9¾ inch diameter, 100-foot-long section weighs but 45 pounds, making it easy to move any number of sections to any desired location. Each 100-foot section of main line hose is equipped with a tee to which is joined an outlet approximately 64 feet long. The outlet sections have 3-inch diameter discharge teats spaced every 18 inches, through which water is sent into the rows to be irrigated. The hose is available in diameters ranging from 4 to 16 inches. From 10 to 15 sections, 1,000 to 1,500 feet, is the usual system length. No drying after use or special care in storing is required. The hose will not rot or support parasitic growth. Exposure to sun and weather causes no deterioration.

Cotton Manufacturers Institute

Following the dissolution of the Cotton Textile Institute, the American Cotton Manufacturers Institute has been formed in Charlotte, N. C., combining the functions of the defunct unit and the American Cotton Manufacturers Association. Ellison S. McKissick has been elected as president of the merged organizations. Mr. McKissick is head of the Alice Manufacturing Co., Easley, S. C. Robert C. Jackson has been elected executive vice-president, George P. Swift, first vice-president, and William H. Ruffin, second vice-president. F. S. Love is the new secretary-treasurer. Dr. C. T. Murchison will serve as economic advisor, and Paul B. Halstead as chief of the Statistical Division.

Offer Improved Moldeze Lubricant

An improved form of Moldeze, the electronized lubricant, which is said to offer many advantages of precision rubber molders, has been announced by Protective Coatings, Inc., of Detroit, Mich. Moldeze is quickly applied by mist spraying and is reported to condition molds and dies to the point of insuring trouble free mold separation, increased production, minimized rejects, and elimination of damage to the molds. According to the manufacturers, Moldeze does not cloud, mar or "watermark" the finish of rubber goods but rather contributes to the production of a smoother finish. The lubricant is said to have an extended value since it has a rust inhibiting action.

Magic Tape Changes Name

Magic Tape Co., 121 Crescent St., Brockton 2, Mass., has announced a change in corporate name to the Magic Chemical Co. The renamed organization has not had a change of management nor has it altered the line of products it produces, consisting mainly of industrial adhesives and cements and coating materials.

NEWS IN BRIEF

A production milestone at Goodyear was reached recently with the completion of the 475,000,000th pneumatic motor vehicle tire to be manufactured by the firm.

A new package for glass thermometers, designed to reduce breakage, simplify inspection and testing, and speed identification of contents, has been introduced by the C. J. Tagliabue Corp., subsidiary of the Weston Electrical Instrument Corp., Newark 5, N. J.

Bee-Line Co., Davenport, Iowa, has developed the Tire-Master Tool, a device which makes a fast job of breaking the bead on any size tire. It is handy to use and has exceptional leverage for removing the largest tires.

According to expense accounts filed with the Secretary of State of the State of Ohio, lobbyists for the railroads and Ohio railroaders spent close to $32,000 to keep a projected rubber conveyor belt line from materializing.

Release to the market of a new line of aluminum core rubber tread industrial wheels named Alcore, in 6 inch, 8 inch and 12 inch sizes, has been announced by the Bassick Co., Bridgeport, Conn.

Some data on titanium, a metal about which little is known, is offered in the September, 1949, issue of the *Horse Head Bulletin*, house organ of the New Jersey Zinc Co. Copies of the bulletin are available upon request to the company.

Offering complete protection against a variety of chemical materials, Hycar coated fabrics made by the Aldan Rubber Co., Philadelphia, Penna., are used in the manufacture of industrial aprons and sleeves where resistance to oils, greases, acids or solvents is a prime requirement.

A new plunger sealing ring or packing molded from Hycar, which is important in the operation of the Cooper-Bessemer "twin-line" high pressure liquid pump, has been developed by Goodrich Chemical.

The U. S. Super Powerlife battery, said to have more power, longer life and other advantages, has been announced by U. S. Rubber. The new battery has three times the liquid capacity of ordinary batteries and utilizes Fiberglas mats in its construction to help preserve the power-producing plates.

A technical bulletin on its Genpol Polyester Resin A-20, a new type of polyester resin for casting and laminating applications, has been made available by the General Tire & Rubber Co., Akron. Extensive information on catalysts and catalyst-promoter systems for use with the new material is included in the bulletin.

A progress report on the "Point Four" program has been issued by the Office of Public Affairs, Department of State, Washington, D. C. It provides background information in summary form on developments in the program.

Durethene Corporation, Chicago, Ill., has prepared a handy film conversion chart for the needle trade, bag converters, food packers, etc. It shows yield of flat film in square and lineal yards for the various standard widths and thicknesses.

Assembly line production of a wide variety of kitchen cabinets for Montgomery-Ward is now under way in the factories of the Goodyear Aircraft Corp. at Akron. Fourteen different items of both floor and wall type cabinet models are currently being produced.

"Inviting the Undertaker" is the title of a new 24-page booklet issued by the National Foremen's Institute, New London, Conn., designed to decrease the highway accident rate of companies throughout the country. Twenty-one cartoons reprinted from the editorial pages of the *N. Y. Daily News* are included.

A new 12-page catalog of Baldwin SR-4 bonded resistance wire strain gages, illustrated by line drawings distinguishing 11 types of gages and listing 102 standard gages, is available from the Testing Equipment Dept., Baldwin Locomotive Works, Philadelphia 42, Penna. The gages are classified by types of wire and cementing materials to be used.

C. J. Tagliabue Corporation, Newark 5, N. J., has recently made available a new 16-page catalog on its Tag laboratory thermometers and hydrometers. The complete line for use in chemical and industrial laboratories is described and illustrated. Copies are available on request to the company.

A technical report on "Philblack O Bound Rubber" has been made available by the Philblack Sales Division, Phillips Chemical Co., Akron 8, Ohio. Ask for Philblack Bulletin No. 17.

"How to Do Business with the Quartermaster Corps" is the title of a new pamphlet issued by the Quartermaster Purchasing Office of the Department of the Army. It is designed as a guide to manufacturers interested in selling to the Quartermaster Corps. Copies are available from any branch office.

Cochrane Corporation, Philadelphia 32, Penna., has issued a new 24-page publication on the Cochrane C-B System of Condensate Drainage Control. Some 57 case histories are covered in the booklet. Copies are available on request to the company.

AKRON POLYMER LECTURE GROUP BEGINS THIRD LECTURE SEASON

The Akron Polymer Lecture Group began its third season of lectures on September 9 at Simmons Hall of the University of Akron in Akron, Ohio. The speaker at that time was Professor P. J. Flory of Cornell University. Professor Flory's subject was "Intrinsic Viscosities of Polymers." On October 7, Dr. R. C. Houtz of E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del., was scheduled to deliver a talk on "Orlon, Acrylic Fiber, Chemistry and Properties."

Other lectures to be delivered through the 1949-1950 season include:

November 4: Free Radicals and Chain Reactions, by Professor M. S. Kharasch of the University of Chicago, Chicago, Ill.

December 2: Ionization of Polymeric Acids and Salts, by Professor F. T. Wall of the University of Illinois, Urbana, Ill.

January 6: Emulsion Polymerization, by Dr. W. V. Smith of the U. S. Rubber Co., New York 20, N. Y.

February 3: Fundamentals of Emulsion Polymerization of Styrene, by Professor I. M. Kolthoff of the University of Minnesota, Minneapolis 14, Minn.

March 3: The Properties of Ion Exchange Resins as Acid Catalysts, by Professor L. P. Hammett of Columbia University, New York, N. Y.

April 7: Flow Properties of High Polymers, by Dr. G. J. Dienes of the Bakelite Corp., New York, N. Y.

Round Copper Shot Available

American Wheelabrator and Equipment Corporation, Mishawaka, Indiana, has developed a process for making round copper shot for use in blast cleaning and shot peening operations. This material is now available in commercial quantities and may be suitable for use in the chemical process industries either as a catalyst or in the formation of filter beds or in other applications. The copper shot is available in screen sizes ranging from .0017" to .0661". Made from electrolytic copper with small amounts of phosphorus added as a deoxidizer, the particles are uniformly spherical down to the smallest size.

Loans for Ceylon Replanting

The Ceylon Cabinet has approved a proposal to grant 1,000,000 rupees in loans to rubber producers for replanting. Announcing this decision, *The Times of Ceylon* reported that the granting of loans, through the agency of the Agricultural and Industrial Credit Corp., will not begin, however, until Parliament has approved the action. Parliament will also have to approve certain amendments to the ordinance governing the operation of the Agricultural and Industrial Credit Corp. because the present ordinance does not provide the granting of large loans.

A complete index to Volume 65 of RUBBER AGE will be found in this issue on Pages 113 to 116.

Hot Tips on Cold Rubber

STATEX K

A COLUMBIAN COLLOID

Proven Best for

1. PROCESSING
2. CARBON-GEL
3. WEAR
4. FLEX LIFE

COLUMBIAN CARBON COMPANY

500 TONS OF SMOKE A DAY

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MPC (Medium Processing Channel)
STANDARD MICRONEX

◆

EPC (Easy Processing Channel)
MICRONEX W-6

◆

VFF (Very Fine Furnace)
STATEX-K

◆

FF (Fine Furnace)
STATEX-B

◆

FEF (Fast Extruding Furnace)
STATEX-M

◆

HMF (High Modulus Furnace)
STATEX-93

◆

SRF (Semi-Reinforcing Furnace)
FURNEX

◆

COLUMBIAN CARBON CO.
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Two New Good-rite Chemicals

The availability in experimental quantities of two new Good-rite chemicals, not previously disclosed in the literature, has been announced by the B. F. Goodrich Chemical Co., Cleveland 15, Ohio. The first of these products is N-Hydroxyethyl-Beta-Alanine. This material is distinguished by three chemically active groups, hydroxyl, amino, and carboxyl, which makes it especially useful as a chemical intermediate for organic synthesis. The product is furnished as a light buff-colored crystalline solid, is miscible with water, soluble in acids and alkalies, slightly soluble in alcohol, and insoluble in benzene and chlorinated hydrocarbons. It has a molecular weight of 133, and a melting point of 143-145° C. The second of the new Good-rite chemicals, N-Dodecyl-Beta-Alanine, may be of special interest as an emulsifier, wetting agent and detergent in the pharmaceutical, soap, and cosmetic industries. It is reactive with both inorganic acids and bases furnishing corresponding salts which notably decrease the surface tension of water. Furnished as a white, waxy crystalline solid, it has a molecular weight of 275 and a melting point of 55-60° C. It is insoluble in water and is soluble in sodium hydroxide solutions, alcohols, chlorinated hydrocarbons and benzene.

Minnesota Mining Promotions

Directors of the Minnesota Mining and Manufacturing Co., meeting recently in St. Paul, Minn., elected as president Richard P. Carlton, former executive vice-president in charge of research, engineering and manufacturing. He succeeded William L. McKnight, who held that office since 1929 and who was elected to the new post of chairman of the board and chairman of the finance committee. Archibald G. Bush, former executive vice-president for marketing and distribution, was elevated to chairmanship of the executive committee. Two new executive vice-presidents were also named at the meeting. George H. Halpin, former vice-president for sales, and Herbert P. Buetow, treasurer of the organization since 1939, were named to the new posts. Mr. Halpin will continue to direct sales activities, while Mr. Buetow is now executive vice-president in charge of finance.

No. 1868 Adflex Emulsion

Adco Polymer Division of the Adhesive Products Corp., 1660 Boone Avenue, New York 60, N. Y., has announced the development of a new adhesive base for surfaces difficult to adhere called No. 1868 Adflex Emulsion. Among the product's unusual qualities is an ability to de-ammoniate natural latex without destabilizing it. In the manufacture of adhesives for leather or fabrics large quantities may be used without obtaining excessive tack. Adflex Emulsion may be used as an extender in vinyl emulsions and is said to be excellent for starch adhesives to which it imparts additional strength, flexibility and water resistance. The emulsion is composed of 48% solids, weighs 8.31 pounds per gallon, has a C.P.S. of 260, a pH of 8.3 and is transparent in color.

Vehicle Registration Rises

There will be 43,298,000 automobiles, trucks and buses on the road by the end of this year, more than at any time in history, the Bureau of Public Roads recently estimated. It said registration of motor vehicles would increase 2,675,736, or 6.6% over the 1948 figure. The estimates do not include publicly-owned vehicles, of which 529,062 were registered last year. The Bureau said registration of commercial trucks and buses was expected to reach 7,807,000, or 6.1% more than the 7,360,810 on the roads last year. It reported that the percentage of increase in motor vehicle registrations is beginning to decline from the peak rates of the past three years. Last year, seventeen states reported a 10% increase, but only New Mexico is expected to do so this year. As in the past, California, New York and Pennsylvania will lead all other states in the total number of registrations.

Employing Handicapped Persons

Vice Admiral Ross T. McIntyre, retired U. S. Marine Corps officer, who is chairman of President Truman's Committee on National Employ the Physically Handicapped Week, has noted that the Firestone Tire & Rubber Co. is considered one of the nation's leaders in employing the physically handicapped. For more than 38 years, Firestone has employed many deaf persons for many different types of work. They are to be found operating huge punch presses, doing chemical laboratory experiments, setting type in the printing department, working on the production of rubber goods, and in many other occupations. The Firestone company has found deaf (mute) workers capable and enthusiastic. National Employ the Physically Handicapped Week was observed this year on October 2 to 8.

Moves Headquarters to Buffalo

The general offices of the U. S. Rubber Reclaiming Co., long located at 500 Fifth Avenue in New York City, have been moved to the plant site at Buffalo, N. Y. In the future all correspondence, orders, etc., should be mailed direct to Buffalo. Practically all of the personnel of the New York office transferred to the new Buffalo headquarters. In addition to its plant at Buffalo, the company also has a plant at Cheektowaga, N. Y.

Lake Shore Changes Name

Effective October 1, 1949, the name of the Lake Shore Tire & Rubber Co., Des Moines, Iowa, was officially changed to the Armstrong Rubber Manufacturing Co. This new name represents a change in title only. The ownership, management and operating policies of the company continue as heretofore.

Acrylic Coating Emulsions

The Resinous Products Division of Rohm & Haas Co., Philadelphia, Penna., has developed three new acrylic coating emulsions of the Rhoplex family called Rhoplex WN-75, WN-80 and FRN. Rhoplex WN-80 is described as an aqueous dispersion of a non-ionic, acrylic type polymer whose stability is said to be valuable when clear, continuous, colorless, greaseproof films are required. WN-75, according to the manufacturer, exhibits the ability to deposit continuous films at low coating weights even when dried at room temperature, and may be used in emulsion paints for porous surfaces and in coatings for a variety of surfaces, particularly where greaseproofness is important. As a binder for clays and colors in decorative coatings, it is said to resist discoloration during aging. Rhoplex FRN may be used alone or as a permanent plasticizer for other less flexible Rhoplex emulsions in coatings for various surfaces. As a saturant for porous materials, it contributes good tear resistance, as well as a resistance to aging assertedly far superior to that obtained with rubber latex. Also, because Rhoplex FRN films resist migration of plasticizers, they may serve as anchor coats for plasticized top coats. Technical bulletins on all three materials are available from the company.

New Rubber For Arctic Use

Discovery of a synthetic rubber polymer that will bounce instead of shatter at —75° F. has been announced by the Firestone Tire & Rubber Co., Akron, Ohio. In comparison with GR-S and natural rubber, the new Arctic polymer has shown two outstanding advantages in tires tested under extreme sub-zero laboratory conditions. Tires don't stiffen so much that they develop permanent flat spots when parked and treads don't harden and chip out. Members of Firestone's research staff for the past two years have been conducting resiliency, elasticity, flex fatigue and highway mileage tests on various types of Arctic rubbers under contract for the U. S. Army's Ordnance Department. Additional research and test programs now are being conducted in collaboration with the Office of Rubber Reserve.

Form Plastic Film Association

Printed Plastic Film Association, Inc., has been incorporated in the State of New York in order to promote fair competition and to establish ethical practices in the printing and processing of plastic film and similar materials. The incorporators and the present directors of the association are: Jack Thordsen, Toscony Fabrics Co., 303 Fifth Avenue, New York 16, N. Y.; Fred Strauss, Harte & Co., 267 Fifth Avenue, New York 16, N. Y.; Raymond Schwartz, Velveray Corp., 350 Broadway, New York 13, N. Y.; R. P. Magid, Hartford Textile Corp., 444 Fourth Avenue, New York 16, N. Y.; and Gerald Markoe, St. Lawrence Textile Corp., 12 West 27th St., New York 1, N. Y. Firms and individuals interested in joining the organization may contact one of the directors for necessary information.

LOS ANGELES NEWS

Approximately one hundred and seventy members and guests of the Los Angeles Rubber Group attended the regular fall meeting of the group held on October 4, at the Hotel Mayfair. A technical group meeting preceded the regular dinner meeting with a panel discussion on Mixing Equipment Problems. Neil R. Pestel (Firestone) acted as moderator. He was assisted by Paul Oliver (Farrel-Birmingham), Phil Drew (Goodyear), George Miller (W. J. Voit), Charles Kuhn (Master Processing), and Tway Andrews (H. M. Royal).

Chairman "Mac" McLaughlin welcomed the members of TLARGI back after the summer vacations with an excellent program of entertainment. Bert Henderson, popular radio and stage entertainer, with the assistance of past chairmen Curtis Wolter, Phil Drew and Ray Stringfield, and Treasurer L. E. Budnick, and Larry Keltner, regaled the audience with a most amusing and entertaining program.

Chairman Charles Churchill announced TLARGI plans for the sponsorship of a new basic rubber technology course, starting October 7. The course will be given on fifteen Monday evenings from 7:00 to 9:00 P.M., in the Laboratory of H. M. Royal, Inc., 4814 Loma Vista Avenue, Los Angeles 11, Calif. Complete details on the course are presented elsewhere in this issue.

Robert Lees, factory manager of American Anode, Inc., has been transferred from the Los Angeles, Calif., plant to Akron, Ohio.

Dixon Sheppard (Goodyear) has been appointed chairman of the TLARGI Technical Committee for the remainder of the year.

R. R. Coleman, former production manager of the National Sponge Cushion Co., Huntington Park, Calif., has been appointed technical director of the Lamb Rubber Co., Glendale 3, Calif.

Charles Fetzner (Monsanto) was recently honored upon completion of 30 years of service with the company.

TLARGI has announced that the Los Angeles Public Library has available Serials Division, Union List, No. 2, of Serial Relating to the field of Rubber, Resins, Plastics and Textiles.

The annual meeting of the past chairmen of the Los Angeles Rubber Group was held at the Mayfair Hotel on August 17. Seven past chairmen of the group reviewed group activities since 1928.

A complete index to Volume 65 of RUBBER AGE will be found in this issue on Pages 113 to 116.

Howdy Doody Latex Puppet

Molded Latex Products, Inc., Paterson 3, N. J., has introduced a latex hand puppet replica of Howdy Doody, the television star made famous by Bob Smith. Molded and costumed in true western

style to look exactly like the television model, Howdy Doody can be made to move and "speak" by slight finger manipulation. The item is retailed in a clever package made to look like a real television set and equipped with a large window "screen" for added play value.

Spencer Named Vice-President

Leland E. Spencer, former deputy director of the Rubber Division of the War Production Board during the war years, and associated with the Goodyear Tire & Rubber Co. for 23 years, has been appointed vice-president of the Kelly-Springfield Tire Co., Cumberland, Md., a Goodyear subsidiary. Mr. Spencer recently returned to this country after serving for two years in Germany assisting the occupational forces in solving reconstruction problems. He started his association with Goodyear in Akron serving in production control, statistics and forecasting departments until 1939, when he was made manager of merchandise planning. He was appointed manager of the company's Topeka, Kansas, plant in 1945, following a three-year tour of duty with the Government in Washington, a position he held until granted leave of absence to serve with the occupational forces.

Changes at Hewitt-Robins, Inc.

Harold Von Thaden, general manager and a director of Hewitt-Robins, Inc., has been elected a vice-president of the company. B. T. Moffat, a vice-president and director of the company, has been placed in charge of sales. John T. Hoyt has been elected to the new office of assistant to the president. It was also revealed that the company's general sales offices have been transferred from Buffalo, N. Y., to New York City.

CANADIAN NEWS

The recent announcement in Toronto by Trade Minister C. D. Howe to the effect that he considers stockpiling "a joint responsibility that should be shared by industry and government" is generally understood at Ottawa to refer exclusively to natural rubber. For some time the rubber manufacturing industry in Canada has been recommending a substantial stockpile of natural rubber in Canada.

In some official Ottawa circles, however, the view is held that maintenance of the government-owned synthetic rubber plant at Sarnia is the best type of stockpile Canada could have against war emergency. Not only is there sufficient production to assure all Canadian needs on a wartime basis, but there is an export surplus which could be used to trade against needed natural rubber imports.

These varied viewpoints were expressed following the recent tripartite meeting in Washington of the United States, Great Britain and Canada, at which Canada promised to review her rubber position. What will probably happen as a result of that "promise" is a request that industry step up its own inventories of natural rubber and the government itself will think in terms of "maximum" rather that "minimum" requirements in its emergency programming.

The devaluation of the British pound has had very little effect on the rubber picture in Canada thus far. Currently, out of an output of approximately 50,000,000 pounds of synthetic rubber in 1949, the Polymer Corporation is marketing 18 to 20 million in Canada and the rest to the United States and Europe, the latter being divided about 50-50.

Despite devaluation, Polymer officials believe they can retain these export markets, for the time being at least. Some Canadian rubber being sold in Europe is being financed by ECA funds, and it is doubtful whether this business will be lost so long as ECA funds are available.

Of total Canadian production of synthetic rubber, about 38,000,000 pounds is of the GR-S type, with production of low temperature polymers accounting for 5 to 6 million of this total. Butyl output is running at the rate of about 12,000,000 pounds annually, with the high styrene and nitrile rubbers running about 2,000,000 pounds each.

The development of "Doe-Tex," a new suede-like fabric, manufactured at its Fabrikoid plant in New Toronto, has been announced by Canadian Industries, Ltd. The new fabric is made by binding minute rayon particles to selected cotton bases with a special adhesive coating. It is expected to be used in making hats, shoes, belts, etc.

Who makes rubber band cutting machines? Tread slitters? Take-Off apparatus? The answers are in the 1949 RUBBER RED BOOK. Price: $5.00 per copy.

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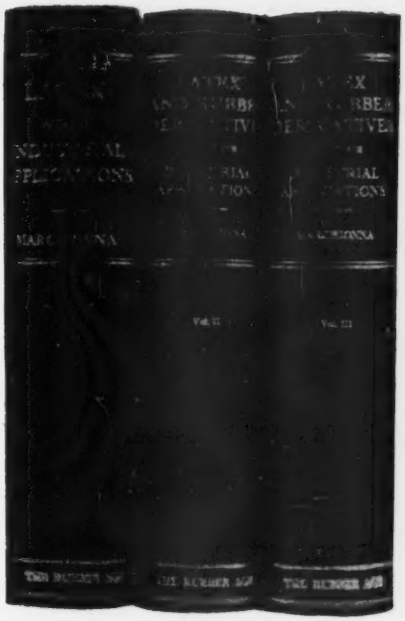

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OBITUARIES

Charles L. Gabriel

Charles L. Gabriel, vice-president in charge of chemical research for Publicker Industries, Inc., Philadelphia, Penna., died on September 24 in Atlantic City, N. J. He was 57 years old. Born in New York City, Mr. Gabriel received a master of science degree from the Massachusetts Institute of Technology in 1913. For three years thereafter, he was production superintendent of the Port Morris Chemical Works. During the first World War he was a first lieutenant in the Chemical Warfare Service. He joined Publicker Industries in 1931, and became a vice-president eleven years later. He wrote many articles for chemistry journals, and held several patents on improvements in the production of lacquer compositions and synthetic resin varnishes. Mr. Gabriel was a member of the American Chemical Society, the American Institute of Chemists, the American Institute of Industrial Engineers, the advisory committee of the Temple University Research Institute, Franklin Institute and several other organizations. His wife and two daughters survive.

R. H. Sotherland

R. H. Sotherland, associated with the Mansfield Tire & Rubber Co., Mansfield, Ohio, from 1912 through 1944, died on August 2 at the age of 77. This service with Mansfield was continuous with the exception of five years when he was associated with the former Columbia Tire & Rubber Co. At the time of his retirement in 1944, Mr. Sotherland was purchasing agent for Mansfield. Mr. Sotherland was well known as a story-teller and as a composer of poetry. He was the author of two volumes of poetry.

John Evans Love

John Evans Love, vice-president of the Eberhard Faber Rubber Co., Newark 4, N. J., and secretary of the Eberhard Faber Pencil Co., Brooklyn, N. Y., died of a heart ailment on October 8 in Northfield, Ill. He was 42 years old. Born in Johnstown, Penna., he was graduated from Princeton University. During World War II, he served as a lieutenant in the Navy. Before joining the Eberhard Faber organizations, he had been associated with the Jersey Cereal Co., Chicago, Ill. His wife and two daughters survive.

Hugo J. Chott

Hugo J. Chott, president of the Crescent Dental Manufacturing Co., Chicago, Ill., and a former president of the Dental Manufacturers Association of America, died on August 28 at MacNeal Hospital, Berwyn, Ill. He was 71 years old. His wife and three daughters survive.

John T. Noble

John J. Noble, vice-president of the Vulcanized Rubber & Plastics Co., New York 16, N. Y., died suddenly of a heart attack on October 2, while visiting in Massillon, Ohio. He was 56 years old. Mr. Noble had been associated with the company for 36 years. He became a director in 1930 and served as secretary from 1931 to 1939, the year in which he was elected vice-president and general sales manager. Mr. Noble was well-known in the hard rubber industry, and was especially known to smoking pipe manufacturers for whom he developed many new items and methods relating to pipe stems, cigar and cigarette holders, etc. A requiem mass was offered at St. John's Roman Catholic Church, Leonia, N. J., on October 6. His wife and son survive.

G. Frank Hobach

G. Frank Hobach, one of the founders of the Akron Rubber Mold & Machine Co., and later an official of the National Rubber Machinery Co., died on September 24 at City Hospital in Akron, Ohio. He was 69 years old. Mr. Hobach retired in 1937, but came out of retirement in 1942 to work for the duration of the war at the Goodyear Aircraft Corp. He was a member of the Portage Country Club, Akron lodge No. 83, F. & A. M., Bethany Commandery No. 72, Akron Scottish Rite Society, Yusef-Khan Grotto and Tadmor Shrine of the Masons. His wife and son survive. Services were conducted on September 26 at the Billow Funeral Home in Akron, with interment in Greenlawn Cemetery.

August Consumption Increases

Rubber consumption increased 11.22% during August to 78,370 long tons from 70,467 in July, according to a recent report of the Rubber Manufacturers Association. Consumption of natural rubber during August amounted to 44,769 tons, an increase of 10.66% from the previous month when 40,458 tons were consumed. Synthetic rubber consumption increased to 33,601 tons from 30,009 tons in July, an increase of 11.97%. Consumption of reclaimed rubber also increased to an estimated 17,814 long tons in August, 11.21% more than the 16,019 tons consumed the month before. During the first eight months of this year, 375,912 tons of natural rubber were consumed against 424,104 tons for the same period of 1948, a decrease of 11.36%. The total synthetic rubber consumed in the same eight months' period amounted to 282,402 tons against 299,554 tons the year before or a reduction of 5.73%. Reclaimed rubber consumed in the first eight months of 1949 amounted to 146,372 tons, 19.98% less than the 182,912 tons consumed in the first eight months of 1948.

Bureau of Standards Reports

A summary of investigations in the physical sciences carried on at the National Bureau of Standards during the fiscal year 1948 is contained in a 272-page illustrated booklet published by the Bureau and now available from the U. S. Government Printing Office. Scientific activities at the Bureau during the year were conducted by 13 divisions concerned with electronics, applied mathematics, atomic and molecular physics, radio propagation, electricity and optics, metrology, heat and power, chemistry, mechanics, organic and fibrous materials, metallurgy, mineral products, and building technology. A fourteenth division dealt with commodity standards. Of the numerous and varied projects carried by approximately 100 sections within these divisions, those of greatest general interest and widest application have been selected for description. *Annual Report of the National Bureau of Standards for 1948* sells for 25 cents a copy, and is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Remittances from foreign countries must be in United States exchange and must include an additional sum of one-third the publication price to cover mailing costs.

United Engineering Laboratory

A modern, up-to-date research laboratory costing about $125,000 is being constructed by the United Engineering and Foundry Co. at its Canton, Ohio, plant to further their research in iron castings and rolls for the steel, non-ferrous, rubber, plastics, and paper industries. The laboratory is being named the F. C. Biggert, Jr., Research Laboratory in honor of the chairman of the board and former president of United for his continued interest in research and development. The building, 42 feet by 110 feet, will contain all of the facilities for research projects. United has also provided space for its present chemical laboratory in the new building. A library for all technical and trade journals and books pertaining to cast iron and foundry practice will also be included. The laboratory is scheduled for completion and operation by November of this year.

New DuPont Neoprene Bulletin

The Rubber Chemical Division of E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del., has begun the publication of an illustrated quarterly information bulletin on new developments in consumer products made of neoprene. The bulletin has been named *The Neoprene Merchandiser*, and supplements *The Neoprene Notebook*, an information bulletin published by the division chiefly for industrial users of rubber. In the first issue of the new bulletin, twelve consumer products using neoprene are described in brief text and pictures. The properties of neoprene that caused it to be chosen for each application are also given. Each description is numbered so that readers, if they desire, may receive more complete information about the product by circling the corresponding number on a return postal card which accompanies the publication.

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Medieval French merchants kept records by cutting notches in a stick. Then they split the stick, kept half and gave the other half to the customer. Later when it came time for the payment, they compared notches to reach an agreement. It is from the French tailler, meaning to cut, that we get "tally"—to count by marking down each unit.

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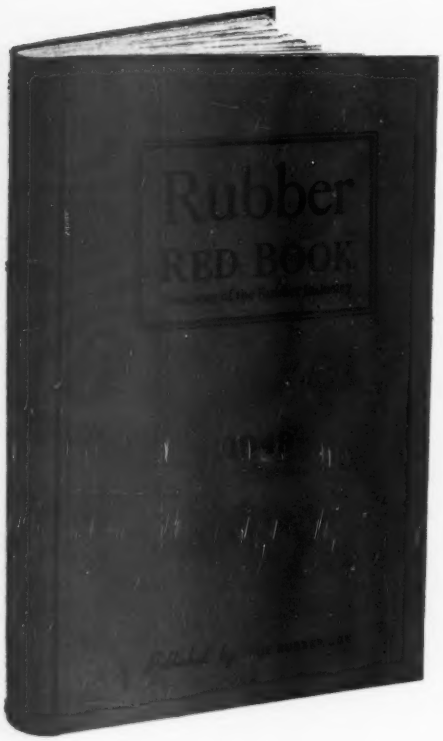

The 1949 edition of the RUBBER RED BOOK, the *Directory of the Rubber Industry*, is a volume of 928 pages — the largest issue ever published.

This increase is reflected in almost every section of the book, particularly in the number of rubber manufacturers, with a corresponding increase of names in the "Who's Who" Section to over 9500 listings. A new section on "Educational Courses in Rubber Chemistry and Technology" has also been added.

The book is divided into three main sections:

I. RUBBER MANUFACTURERS — with personnel, products made, and a geographical breakdown of rubber plants;

II. SUPPLIERS — with complete product classifications of Machinery, Chemicals, Fabrics, Rubber (Natural, Synthetic, Reclaimed, Scrap), Latex, and other materials—with full names and addresses;

III. WHO'S WHO — a section of over 9500 names of leading people in the rubber industry, with company connections and addresses.

In addition, other sections cover Brand Names (Chemicals, Synthetic Rubber, Reclaimed Rubber); Consulting Technologists; Sales Agents and Branch Offices of Suppliers; Educational Courses In Rubber Chemistry and Technology; Technical Journals; Trade and Technical Organizations.

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PREFACE TO SEVENTH EDITION

RUBBER MANUFACTURERS IN U. S. (Total, 1057)
- Alphabetical Section
- Classified List of Rubber Products
- Geographical Section

RUBBER MANUFACTURERS IN CANADA (Total, 76)

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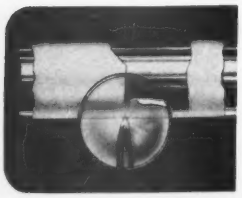

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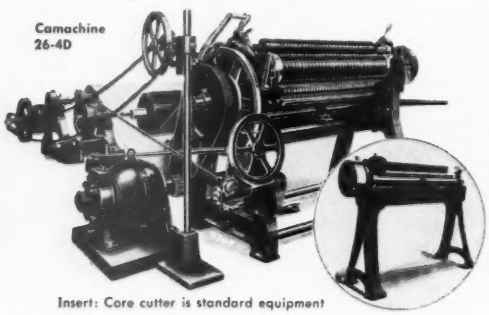

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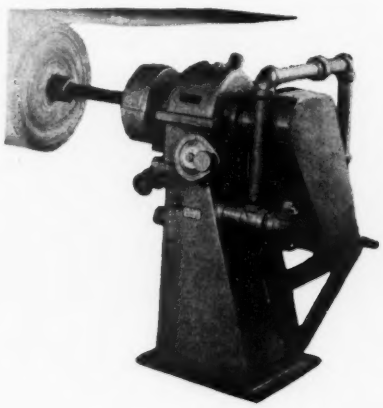
Greystone Drive for Web Control

The Greystone Drive, a mechanical-hydraulic unit that winds or unrolls a web at any predetermined tension, from the maximum capacity of the unit down to zero, is currently being marketed by Frank W. Egan & Co., Bound Brook, N. J. The unit can be used as a brake to eliminate brake drums and brake shoes, manual control of web tension, and variable tension on the web,



and as a drive to eliminate slip belt drives, slip clutch drives, manual control of web tensions, variable tension on the web, and poorly wound and telescoped rolls. Used as either a brake or drive, it provides uniform constant tension, any amount of tension from running a free loop to maximum tension required, and completely automatic control.

The device features a combination differential gear and hydraulic assembly, and is a completely packaged unit except for a power source. The power is put into one side of the differential, and the other side of the differential provides the drive to the center shaft of the winding unit either directly or indirectly. The center of the differential unit comprising two bevel gears is housed in a ring gear which drives a pinion connected to the main hydraulic pump. A secondary pump is driven from a gear on the output shaft to the winder. Both of these pumps work from a common reservoir against a valve in their respective circuits.

The purpose of the main pump and its control valve is to determine the amount of tension to be maintained on the web, once it is set, roll after roll can be run without any further adjustments. The purpose of the secondary pump and its control valve is a "leveling" device for the unit which makes it possible to maintain absolute constant tension, a slight decrease in tension from the core to the full roll, or a slight increase in tension from the core to the full roll. The latter two conditions are in a straight line relationship and the amount of increase or decrease can be determined by the valve settings. There are no dancer rolls, slip clutches or brakes required.

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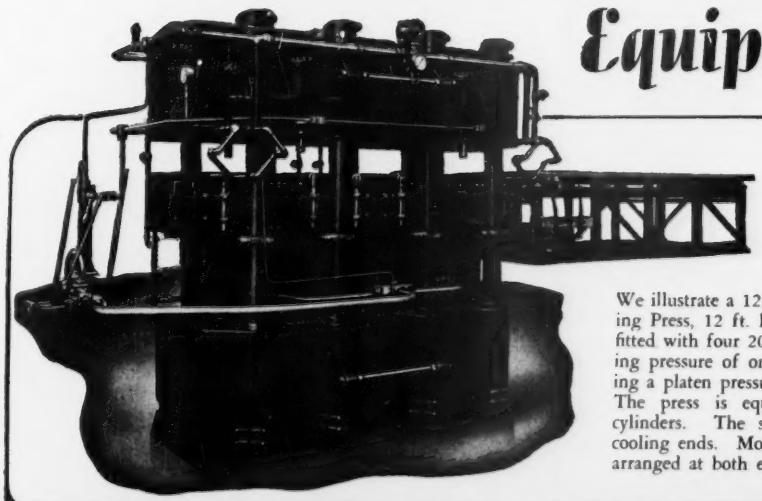

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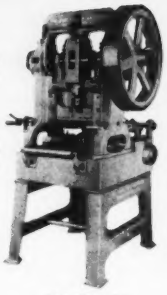
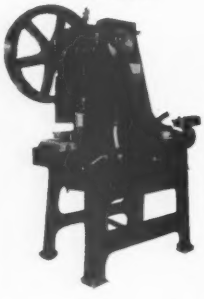
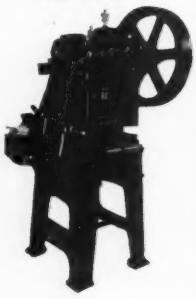


MODEL A2

MODEL A1



MODEL A3



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PRODUCTION MACHINES SINCE 1896

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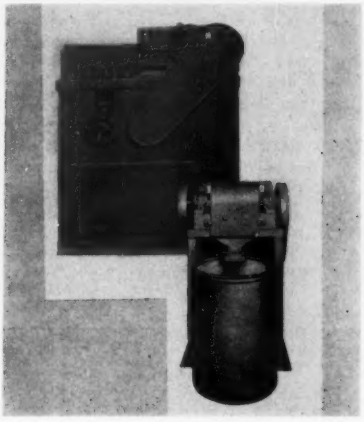
Ball and Jewell Pellet-Dicer

An improved pelletizer or dicer for use by manufacturers or processors of vinyl and other types of thermoplastic materials has been introduced by Ball & Jewell, Inc., 24 Franklin St., Brooklyn 22, N. Y. Known as the Pellet-Dicer, the unit employs a variable speed



control which permits the cutting of ⅛-inch cubes at extrusion speeds of from 10 to 50 feet per minute. By changing sprockets, cubes up to 5/16-inch may be cut. The standard unit has a maximum width of 9½ inches and is available with a slitting attachment if it is desirable to slit and cube continuous sheets in the same operation.

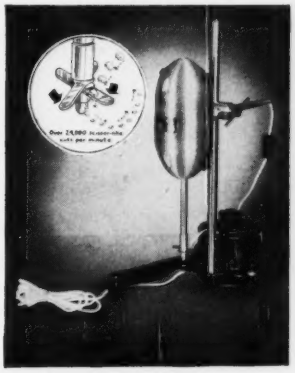
Operated by a 1½ h.p. motor, the machine is said to cut down on dicer power consumption by having the stationary bed knife set at a shear cut and the four revolving knives at a straight cut angle. A lifting lever on the feed roll allows quick and positive insertion of material when starting the run, and a waste-preventive shut-off gate and discharge chute with flange connection permit attachment of a stocking around the chute. Control side view and discharge end of the Pellet-Dicer are shown herewith. Specifications include welded and fabricated steel frame; semi-steel body and steel rolls; one-piece hardened steel knives; horizontal drive; a feed roll with sealed-in ball bearings; net weight of 950 pounds. Dimensions are 36 inches long, 46 inches high and 26 inches wide.

Bete Spray Nozzle

Said to operate on a radically different principle, the Bete Spray Nozzle, produced by the Bete Fog Nozzle Co., Greenfield, Mass., features a unique spiral design that produces a finer atomization and yet is practically non-clogging. The new nozzles shear from a single, high velocity jet a continuous film which readily breaks up into uniformly fine particles at relatively low pressures. No vanes or whirl discs are required with this new type of nozzle, as they are with most conventional nozzles. The Bete company is now producing the new type nozzle in various spray patterns and with flow rates from one-quarter gallons per minute to 100 g.p.m. They can be used for all kinds of spray problems where a fine break-up at low pressure is required.

Brookfield Counter-Rotating Mixer

Fast and efficient laboratory mixing is offered in the Counter-Rotating Mixer manufactured by the Brookfield Engineering Laboratories of Stoughton, Mass. By using two motors driving two concentric oppositely rotating shafts, propeller equipped, the Brookfield mixer produces

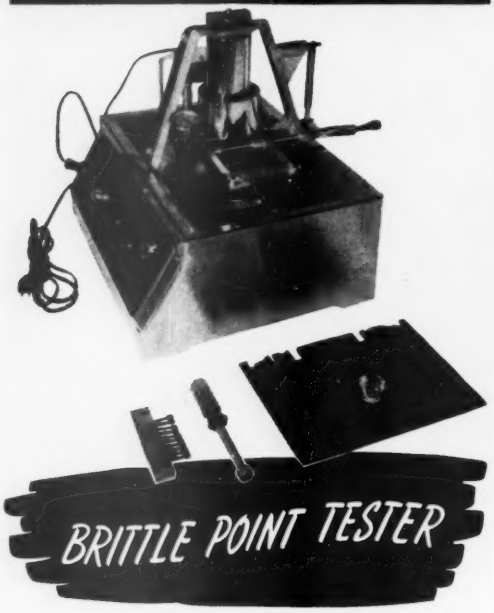


an annular rather than circular flow. Thus, all materials, including the heavier particles, are drawn into the propellers where they must pass through the shearing zone. There is said to be practically no cavitation, no centrifugal effect, and the liquid level remains essentially constant, allowing the use of nearly filled containers.

The unit allows relative speeds from approximately 200 to 12,000 r.p.m., and provides a continuously variable speed control through a general radio variac which is mounted, together with an on-off switch, on the support stand base. The motors are completely enclosed for protection from corrosive fumes and all immersible parts are of type 302 stainless steel, except a bottom guide bearing of leaded bronze. Four high speed, precision, permanently greased ball bearings are provided, and a smooth-acting clamp allows easy position adjustments.

PHILBLACK O PHILBLACK A PHILBLACK O PHILBLACK A PHILBLACK O PHILBLACK A

TESTED IS TRUSTED



NOW manufactured by Scott Testers, Inc., the American Cyanamid & Chemical Company's brittle point tester, Model E, conforms to A. S. T. M. designation D746. Outstanding features are quietness and compactness. It weighs only 27 lbs., and measures 15 x 16 x 15½"—thus it is readily portable and easily stowed away. It is solenoid actuated, with stainless steel chamber for the conditioning medium. Clamp takes standard specimen: in addition, a magazine (shown above) can be preloaded with 9 specimens and inserted as a unit in clamp.

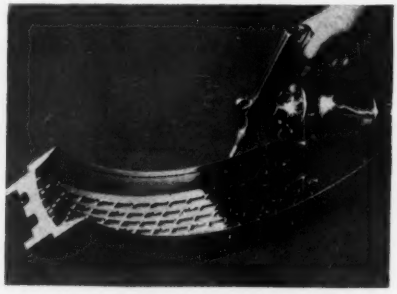
Descriptive literature upon request

SCOTT TESTERS, INC. 85 Blackstone St. Providence, R. I.

Standard of the World

Enpro Combination Blast Gun

The cleaning of mold matrices and molds is simplified through the use of the Enpro Combination Blast Gun manufactured by Engineered Products, Denver, Colo. The Enpro gun is a versatile, air-operated, port-



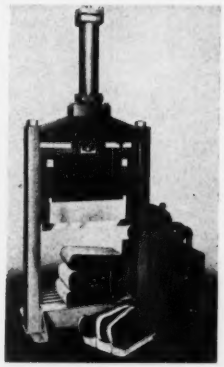
able adaptation of impact cleaning which efficiently removes baked-in carbon and rubber residues. The unit is connected to any air line and is equipped with accessories for impact cleaning operations or for spraying solvents and liquids. The nozzles are easily changed by loosening a retaining nut and slipping another nozzle in place. Two attachments are supplied with the Enpro Gun, an "abrading" case hardened nozzle for use in impact cleaning operations, and a "solvent" nozzle for use with oils or chemicals. Enpro is equipped with a 3-pint container. All parts are precision machined. The packaged shipping weight is 4½ pounds. Maximum air consumption is 9½ cubic feet per minute at 100 to 150 pounds pressure.

Colonial Porcelain Glove Forms

Depicted below are new porcelain glove forms manufactured by the Colonial Development Co., Akron, Ohio. These forms feature embossed, non-slip designs for the

production of non-slip rubber or plastic gloves. The new forms are supplied with the embossed non-slip design as shown, or in special designs for use by individual glove manufacturers.

CRUDE RUBBER BALE CUTTER



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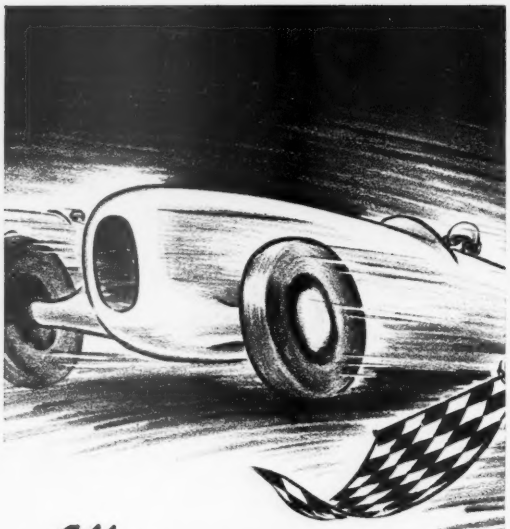
PATERSON 3, NEW JERSEY

ROYLE No. 2 Extruding Machine. Non-extended cylinder, plain tubing head, direct coupled drive. This extruding machine is designed for conventional applications in the rubber field.



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REVIEWS

BOOKS

American Cotton Handbook. (Second Edition). By H. R. Mauersberger and Gilbert R. Merrill. Textile Book Publishers, Inc., New York 16, N. Y. 5½ x 8 in. 940 pp. $9.50.

This new text on cotton covers the material facts of the industry completely from the early historical background of cotton cultivation and machinery development through a comprehensive cotton bibliography. The economics of growing and marketing fiber and cloth, cotton legislation and machinery developments are traced from early beginnings through World War II. Within the covers of the book are outlines of all of the important functions of the industry and a complete picture of its processes from raw cotton to finished goods. All the manufacturing processes from ginning and classing the fiber through weaving are covered in individual chapters, as are the manufacture of cotton knit goods and the bleaching, dyeing, printing and finishing of cotton fabrics. New information on such recent developments as resin-finishing and continuous processing is presented. The latest methods and standards for physical and chemical testing of both fiber yarn and fabric are thoroughly discussed in individual chapters. A bibliography of American and English books, listings of manufacturer's literature, U. S. Government publications, directories, yearbooks, catalogs, magazines, trade associations, cotton magazines and current cotton films completes the text.

•

Industrial Rheology and Rheological Structures. By Henry Green. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 5½ x 9 in. 312 pp. $5.50.

This manual and scientific working guide represents a unique correlation of rheological and structural microscopic investigation. The need for a logical system for measuring the viscosity of substances has long been felt in the field of rheology. This book attempts to set up such a sound and concise system. That part of rheology that deals with purely viscous materials, such as gasoline, alcohol and water, has never been troublesome. It is with the non-Newtonians, such as paints, printing inks, high viscosity oils, etc., that the book is concerned since the one-point method is no longer adequate for measuring these substances. This book helps to substitute other methods of measurement in place of the one-point method. The author has succeeded in presenting a consistent and readable account which will be of invaluable assistance to many scientific workers. The systems of nomenclature and terminology used in the book correspond to a large body of thought in this country. Particularly helpful for the beginner in the field are the many illustrations which supplement the text material.

• •

United States Relations With China. (Department of State Publication 3573). Division of Publications, Office of Public Affairs, U. S. Department of State, Washington, D. C. 6 x 9½ in. 1054 pp. $3.00.

In these days of political unrest in the Far East, this State Department appraisal of our relationships with China during the past five years comes at an opportune time. The book first reviews historical American policy towards China during the past 100 years, and then considers relationships between the Kuomintang and the Chinese Communists in the period before the outbreak of hostilities. Our various missions to China by Patrick Hurley, George C. Marshall, etc., economic missions, military missions, etc., are described in order to present a complete picture of dealings with the Chinese. The book is especially valuable as a redefinition of American policy, and the considerations underlying the formulation of a program of aid to China.

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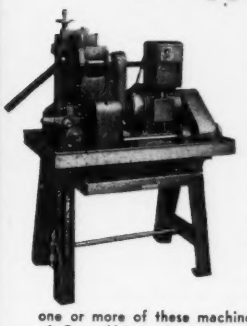

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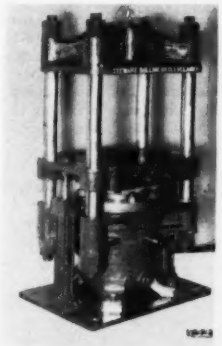
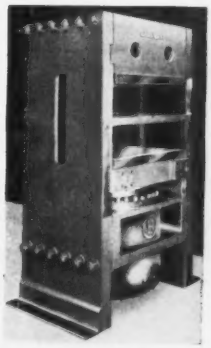
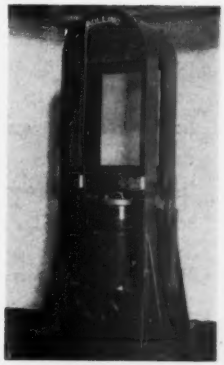


4-BOLT



SLAB SIDE



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REVIEWS (CONT'D)

Modern Plastics Encyclopedia. (1949 Edition). Modern Plastics, Inc., 122 East 42nd St., New York 17, N. Y. 9 x 12 in. 1370 pp. $5.00.

Designed as a comprehensive working guide to all phases of plastics planning and production for companies using or contemplating the use of plastics products or components, this encyclopedia presents also a complete picture of the technical advances made in the plastics industry during the past 12 months. Characteristic of the encyclopedic scope of the work are the numerous charts and tables containing complete chemical formulas, physical and chemical properties and ASTM specifications. A striking feature of the new work is a "Plastics in Use" section which analyzes more than 1,000 successful applications of plastics in 27 basic industrial fields ranging from building materials to toys and novelties. Other sections of the book provide detailed information on types of plastics materials, designing in plastics, selection of raw materials and manufacturing techniques. The needs of plant superintendents and plant engineers are met in chapters on molding, extruding, casting, fabricating, finishing and assembling operations, and the machines and equipment presently available. A buyers' guide is also offered for the company purchasing agent. This valuable reference work is presented in a one-volume edition, unlike other recent editions which were separated into one or more volumes.

•

Kaolin Clays and Their Industrial Uses. J. M. Huber Corp., 342 Madison Avenue, New York 17, N. Y. 6 x 9 in. 142 pp.

Illustrated with over 75 photographs and charts, and containing 49 tables, this book is a comprehensive review of the technology of producing, refining, testing and using kaolin clays, and is intended as a standard reference and authoritative text on the subject. The book highlights some of the many important advances which have resulted from the advent of synthetic rubber and the rapid growth of the machine coating of paper. A section of the text is devoted to an evaluation of Huber clays in natural rubber, GR-S, neoprene, butyl, and buna-N type rubbers. The physical characteristics of the clays including abrasiveness, brightness, dispersibility, particle size, pH, screen residue and viscosity are discussed. Tests for determining these properties are described and the results interpreted. Other chapters discuss in detail filler grade clays, coating grade clays, the clay content of paper, and clays in wall paper. References to other important applications for clays, such as ceramics, adhesives, and insecticides, are necessarily brief and will be the subject of future publications. Members of the rubber industry, and other industries using clay, may obtain copies of the book by writing the J. M. Huber Corp. on their company letterhead.

•

Lange's Handbook of Chemistry. (Seventh Edition). Compiled and Edited by Norbert Adolph Lange, assisted by Gordon M. Forker. Handbook Publishers, Inc., Sandusky, Ohio. 5½ x 7 in. 1,920 pp. $7.00.

Primarily a compilation of physical data, the latest edition of this invaluable reference work has been thoroughly revised and amended to bring the material presented completely up-to-date. The index alone contains over 25 pages and is filled by more than 3,000 entries. As in previous editions the elements are described as to their physical properties, atomic weights, etc. Data is also furnished on inorganic compounds, organic compounds, analytical chemistry, physical chemistry, industrial chemistry, etc. Many of the tables have been extended or completely rewritten, while many others have been added to make this edition the most complete yet published. The pressure to add additional information has caused the editors to eliminate a portion of the mathematical data which appeared as an appendix in all previous editions. For those chemists, however, who have need for a more comprehensive treatment of mathematics the publishers can supply the omitted appendix of mathematical tables and formulae in a separately bound volume.

Products of the General Chemical Division. General Chemical Division, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y. 8¼ x 10 in. 176 pages.

A compilation of data concerning products and services offered by the division is presented in this catalog. Acids, ammonia, alums, sodium compounds and other industrial and fine chemicals are covered as to formula, physical properties, grades or strengths, packing and shipping regulations and principal uses. Miscellaneous tables and charts offer reference data of interest and use to every consumer of chemicals and chemical products. The catalog is profusely illustrated and bound in loose-leaf style so that supplementary page inserts may be added as issued.

•

Aromatic Industrial Solvents. Barrett Division, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y. 8½ x 11 in. 50 pp.

This booklet deals primarily with aromatic distillates as solvents. However, reference is made to the pure hydrocarbons which are used as raw materials for the manufacture of numerous chemicals. Some of the subjects covered in the booklet include uses, containers, safe use of solvents, product specifications, properties and methods of testing, solvent power, etc. Photographs, charts and graphs are offered as is a bibliography of source materials.

•

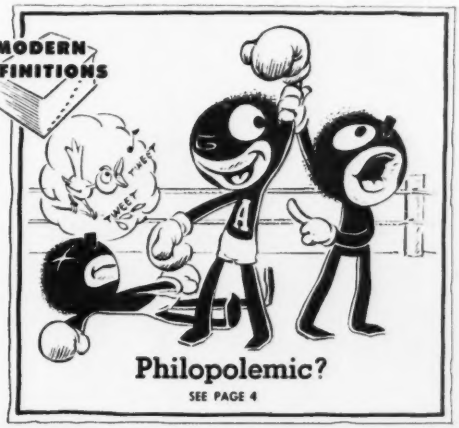
Indonex Plasticizers in Low Cost Automotive Rubber Products. (Circular No. 13-37). Indoil Chemical Co., 910 South Michigan Avenue, Chicago 80, Ill. 8½ x 11 in. 4 pp.

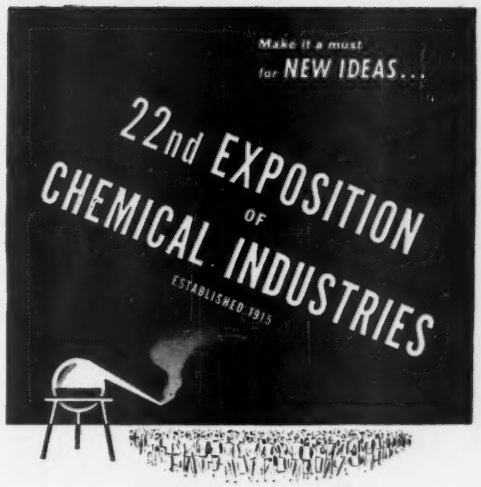
Formulations of three low tensile extruded compounds for automotive rubber products meeting SAE-ASTM specifications are presented in this technical report. A series of compounds suitable for weatherstrip and other molded automotive rubber products are also presented. In each instance, physical properties before and after aging are discussed as to modulus, tensile, elongation, hardness and tear strength. The information is presented in text and tabular form.

•

The Sunproofs-Inhibitors of Atmospheric Cracking. (Compounding Research Report No. 12). Naugatuck Chemical Division, United States Rubber Co., Rockefeller Center, New York 20, N. Y. 8½ x 11 in. 12 pp.

The chemical composition, physical properties and compounding properties of the anti-atmosphere cracking agents produced by the company are described and discussed in this technical report. The specific problem, that is, the weathering of rubber articles, is discussed and solutions offered. Such matters as how much to use and frosting are also considered.





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REVIEWS (CONT'D)

Neoprene Type W. By D. B. Forman, R. R. Radcliff, and L. R. Mayo. (Report No. 49-3). Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. 6 x 9½ in. 20 pp.

Physical test data, properties and uses of Neoprene Type W, a general-purpose chloroprene polymer which has properties quite different from those of the other commercial types of neoprene, are discussed in this technical report. The properties of Neoprene Type W and its compounds are compared with Neoprene Type GN as an unvulcanized polymer as to composition, specific gravity, physical form and color, odor, plasticity, stability, etc. Vulcanization and processing characteristics of the two types of neoprene are also contrasted. Types W, GN and GN-A are also compared as to their respective milling characteristics. The vulcanization of Type W is carefully considered. Various stocks which have been compounded with different accelerators are compared as to elongation, modulus, scorch time, etc., and the specific qualities which suit each to particular purposes are discussed. The compression set and the resilience of this new type of neoprene and the crystallization of its compounds are also considered. Much of the information is presented in tabular and chart form.

•

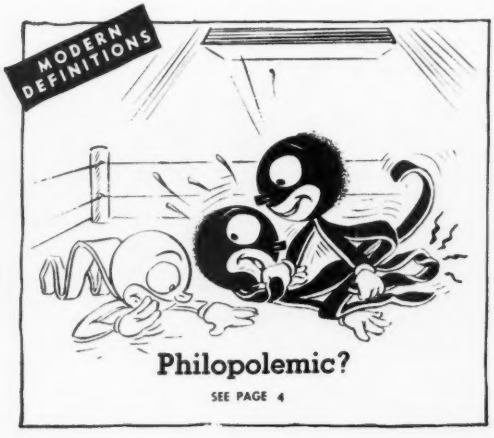
Die-Less Duplicating. (Catalog No. 49-15). O'Neil-Irwin Manufacturing Co., Lake City, Minn. 8½ x 11 in. 44 pp.

This catalog first explains the company system of die-less duplicating, and then enters into the presentation of different precision machines and instruments produced by the organization. Among the units considered are rod benders, benders, shears, power punches, radius and other brakes, etc. Examples of die-less duplications machined to accuracies as close as .001 inch are shown. The specifications and capacities of each unit are presented, while photographs and cutaway drawings illustrate external and internal structure. Application of each unit to specific tasks is also considered.

•

Microvac Pumps for High Vacuum. (Catalog No. 700). Stokes Machine Co., 5900 Tabor Road, Philadelphia 20, Penna. 8½ x 11 in. 36 pp.

This catalog and data book describes the company's complete line of Microvac pumps, including specifications, and their applications in research and industry. In addition, vacuum data and engineering information is given, together with actual vacuum processing problems for many industries. Charts, graphs and tables included in the catalog form a ready-reference for those in vacuum work. Other Stokes equipment for vacuum processing is briefly described, with specifications.



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Cudahy, Wisconsin

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SPECIAL FEATURES

- Has micro-adjustment for accurate widths.
- Equipped with water tank which feeds water to the slotted knife and to the cut.
- Has repulsion induction motor which carries any overloads.
- Automatic sharpener device keeps knife keen and sharp.
- Has base with rollers and is very easy to handle.

Cuts within 1/64 inch to 1/100 inch tolerance depending on grades of rubber. Cuts a slab down to the last shaving. Cuts all grades of rubber including pure gum, sponge, etc. Cuts squarely—no rejects.

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(REG. U. S. PAT. OFF.)

Our products are engineered to fill every need in natural and synthetic rubber compounding wherever the use of vulcanized oil is indicated.

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The services of our laboratory are at your disposal in solving your compounding problems

THE STAMFORD RUBBER SUPPLY CO.

STAMFORD, CONN.

Makers of Stamford "Factice" Vulcanized Oil Since 1900

MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

Natural Rubber

The price of spot rubber on the Commodity Exchange has swung in a wide range of 2.50 cents since our last report (September 8), high for the period being 18.62 cents reached on September 13, and low being 16.12 cents reached on October 11. The average price of spot rubber for the month of September was 17.58 cents based upon 21 trading days. This compares with an average of 16.60 cents for the month of August.

Reverberations of British currency devaluation resounded in the Commodity Exchange during this period. On September 21, trading in rubber futures set a new post-war record for volume. Total transactions in all futures for the day amounted to 5,790 long tons, a record that surpassed the previous peak of 4,900 tons established on December 4, 1947.

The long-heralded resumption of stockpile buying of crude rubber by the U. S. Government was announced on October 11. This announcement was the cause of a wide-spread buying movement among leading dealers.

It has been estimated in trade circles that Russia has more than doubled its imports of natural rubber in the first eight months of this year. The probable figure was 77,500 tons, compared with 33,750 tons in the first eight months of the previous year.

Today's quotations on the outside market, London and Singapore, follow:

Outside Market

No. 1 Ribbed Smoked Sheets:	
Spot	.16¼
November-December	16
January-March	15¾
Thin Latex Crepe:	
Spot	.22¼
October	.22¼
Thin Brown Crepe, No. 2	.14½
Ambers, No. 3	.14½
Flat Bark Crepe	.13½

London Market

(Standard Smoked Sheets)

December	15.20 - 15.27
January-March	15.23 - 15.30

Singapore Market

(Standard Smoked Sheets)

October	14.40 - 14.44

Synthetic Rubber

(Dry Types-Per Pound)

Butaprene NF	.440 - .450
Butaprene NL	.450 - .460
Butaprene NAA	.490 - .500
Butaprene NXM	.520 - .530
Chemigum 30 N4NS	.400 - .470
Chemigum 50N4NS	.400 - .470
Chemigum N3	.450 - .520
GR-I	— .185
GR-S	— .185
Hycar OR-25	.450 - .460
Hycar OR-15	.520 - .530
Hycar OS-10	.500 - .510
Neoprene Type E	— - .650
Neoprene Types CG and AC	— - .500
Neoprene Types FR and KNR	— - .750
Neoprene Type S	— - .320
Neoprene Type GN	— .32
Neoprene Type GN-A	— .32
Neoprene Type RT	— .35
Neoprene Type W	— .35
Paracril 18	.430 - .450
Paracril 26	.440 - .460
Paracril 35	.510 - .530
Silastic (compounded)	2.35 - 4.40
Thiokol Type A	.370 - .470
Thiokol Type ST	.750 - .850
Thiokol Type FA	.520 - .620
Thiokol PR-1	.750 - .850

NEW YORK, OCT. 13, 1949

Scrap Rubber

Evidences of an upswing in market conditions have been noted in the scrap rubber market particularly in tube stocks. The export market has also been experiencing an upward turn. At this writing, the scrap rubber market is in a better position than it has been for the past few months. In accordance with the brighter market picture, scrap prices have been adjusted upward. Current quotations follow:

Mixed passenger tires	ton	$13.00
Beadless truck tires	ton	nom.
Mixed truck tires	ton	14.00
Beadless passenger tires	ton	nom.
No. 1 passenger peelings	ton	42.50
No. 1 truck peelings	ton	42.50
Red passenger tubes	lb.	.07
Black passenger tubes	lb.	.04
Mixed passenger tubes	lb.	.04
No. 2 truck tubes	lb.	nom.
Red truck tubes	lb.	.07
Black truck tubes	lb.	.03¾
Buffings	ton	15.00

Reclaimed Rubber

Consumption of reclaim for the month of August is estimated at 19,202 tons by the Department of Commerce. This compares with a consumption of 15,966 tons for the month of July. The ratio of reclaim consumption to total new rubber consumption continues an upward swing, approaching those levels reached in previous years. The general picture for reclaim continues an upward trend evidenced during the past few weeks. Some minor price changes have been made. Current quotations follow:

Tires

Black, Digester (Natural)	lb.	.08¼ - .08¾
Peels No. 1	lb.	.08¼ - .08¾
Whole Tire (Blend)	lb.	.08¼ - .08¾

Inner Tubes

Black (Natural)	lb.	.11½ - .12
Red (Natural)	lb.	.13½ - .14½
Butyl	lb.	.08¼ - .08¾

Shoe

Unwashed (Natural)	lb.	.08¾ - .09¼

Cotton Tire Fabrics

As in the past, the general instability of the domestic as well as the export markets, and the changeover to rayon and nylon cords, has contributed to the lethargic cotton tire fabric market. While other types of yarns and fabrics have been experiencing an upward trend, the tire fabric market holds to the low levels maintained for the past several months. Current quotations follow:

Standard, Peeler, 12/4/2	lb.	.68
Standard, Peeler, 14/4/2	lb.	.70
Standard, Peeler, 16/4/3	lb.	.7250
Extra Staple, Peeler, 12/4/2	lb.	.8315
Extra Staple, Peeler, 14/4/2	lb.	.8575
Extra Staple, Peeler, 16/4/3	lb.	.8825

Chafers

14.4 oz. (per sq. yard)	lb.	.67
9.25 oz. (per sq. yard)	lb.	.6325
11.65 oz. (per sq. yard)	lb.	.60
8.9 oz. (per sq. yard)	lb	.6475

Cotton

The price of middling uplands on the Cotton Exchange has swung in a range of 1.55 cents since our last report (September 8), high for the period being 31.15 cents reached on September 13 and again on September 15, and low for the period being 29.60 cents reached on October 8. The average price of middling uplands for the month of September was 30.94 cents based upon 23 trading days. This compares with an average of 32.06 cents for the month of August.

The Department of Agriculture has estimated this year's cotton crop at 15,446,000 bales of 500 pounds gross weight, 503,000 bales more than the 14,943,000 forecast a month ago. Last year's crop was 14,868,000 bales and the ten year average (1938-47) was 11,306,000 bales.

Devaluation of currencies abroad will not give any advantages to the United States, said Dr. C. T. Murchison, economic advisor to the newly-formed American Cotton Manufacturers Institute. He pointed out that England could sell ECA cotton to English mills at whatever price that would be advantageous to their export trade, and stated that devaluation had nullified tariffs on cotton goods.

International trade in cotton rose sharply in the 1948-49 marketing year, the Agriculture Department reported. World exports were listed at 10,750,000 bales, an increase of 1,900,00 over the previous season.

Quotations for middling uplands on the exchange follow:

	Sept. 8	October 13		
	Close	High	Low	Close
October	29.79	29.95	29.85	29.85
December	29.78	29.78	29.65	29.65
March	29.78	29.73	29.60	29.60

Closing Rubber Prices on New York Commodity Exchange

(No. 1 R.S.S. Contract)

FROM SEPTEMBER 9 TO OCTOBER 13

Date Sept.	Spot	Sept.	Dec.	Mar.	May	Sales
9	18.00	18.20	17.35	17.10	16.78	240
10	——	——	——	——	——	——
11	——	——	——	——	——	——
12	18.12	18.22	17.53	17.20	17.00	117
13	18.62	18.72	18.20	17.90	17.75	297
14	18.38	18.40	17.85	17.55	17.27	125
15	18.38	18.53	18.04	17.76	17.45	359
16	18.25	18.55	17.75	17.50	17.20	129
17	——	——	——	——	——	——
18	——	——	——	——	——	——
19	17.62	18.15	16.69	16.55	16.30	444
20	16.88	17.25	15.80	15.70	15.55	579
21	17.25	17.60	16.16	16.02	15.75	331
22	17.12	17.25	16.22	16.05	15.77	170
23	17.00	17.00	16.30	16.15	15.85	188
24	——	——	——	——	——	——
25	——	——	——	——	——	——
26	17.00	17.00	16.24	16.03	15.75	90
27	17.00	16.80	16.10	15.90	15.65	117
28	17.00	17.00	16.14	15.86	15.60	74
29	16.75	——	16.12	15.83	15.53	142
30	16.62	——	16.14	15.78	15.50	44
Oct 1	——	——	——	——	——	——
2	——	——	——	——	——	——
3	16.62	——	15.82	15.45	15.20	71
4	16.25	——	16.15	15.65	15.40	101
5	16.38	——	16.10	15.75	15.40	18
6	16.38	——	16.10	15.67	15.31	28
7	16.25	——	16.10	15.73	15.45	49
8	●	——	——	——	——	——
9	——	——	——	——	——	——
10	16.25	——	16.05	15.70	15.45	68
11	16.12	——	16.00	15.68	15.40	121
12	——	——	——	——	——	——
13	16.50	——	15.90	15.70	15.50	219

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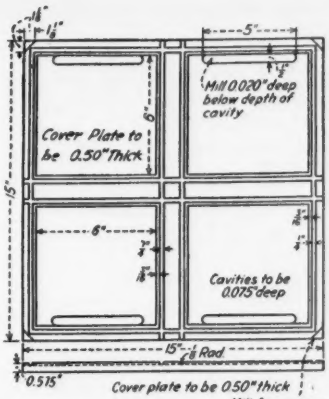

Molds from 7" to 24" sq. for tension samples, and molds for compression samples if desired. Molds in dimensions varying from 1" x 1" x 1¼" up for abrasion test samples. Molds and dies for slab curing. Please describe your need.

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   - Chemical Resistance
   - Toughness
   - Abrasion
   - Heat Resistance
   - Mechanical Properties

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SYNVAR CORPORATION
WILMINGTON 99, DELAWARE

CURRENT MARKET PRICES

Of Rubber Chemicals and Compounding Ingredients

OCTOBER 13, 1949

Prices are, in general, f.o.b. works. Range of prices indicates grade or quantity variations.

Abbreviations: bbls., barrels; c.l., carlot; cyl., cylinder; dlvd., delivered; dms., drums; l.c.l., less than carlot; M.B., masterbatch; min., minimum; ref., refined; sap., saponified; sp., special; syn., synthetic; t.c., tank cars.

[a] East of Mississippi.

—The arrangement of this section follows closely the Chemical Section of the 1947 RUBBER RED BOOK to which readers are referred to determine the classification of any material or brand name.

—Although suppliers of every material were contacted for price information, only those materials are listed for which quotations have been furnished us. The quotations are not guaranteed and prospective purchasers should contact suppliers for confirmation before placing orders. Suppliers are requested to send us regularly current prices on all of their materials used in the rubber industry.

—All requests for information or listings should be sent to Market Editor, RUBBER AGE, 250 West 57th St., New York 19, N. Y.

ACCELERATORS

A-1	lb.	.34	.39
A-10	lb.	.40	.47
A-19	lb.	.52	.58
A-32	lb.	.59	.69
A-77	lb.	.42	.55
A-100	lb.	.42	.55
Accelerator No. 8	lb.	——	.83
Accelerator—49	lb.	.44	.45
Accelerator—89	lb.	——	1.20
Accelerator—122	lb.	——	1.30
Accelerator—552	lb.	——	1.80
Accelerator—808	lb.	.59	.61
Accelerator—833	lb.	1.13	1.15
Acro AC-165	lb.	.37	.39
Aliax	lb.	.35	.37
Arazate	lb.	——	2.16
Beutene	lb.	.59	.61
Bismate	lb.	——	3.00
B-J-F	lb.	.27	.29
Butasan	lb.	——	1.00
Butazate	lb.	——	1.00
Butyl Eight	lb.	1.00	1.25
Captax	lb.	.27	.29
C-P-B	lb.	——	1.95
Cumate	lb.	——	1.45
Cuprax	lb.	.60	.62
Dibenzo G-M-F	lb.	——	2.65
Diorthotolyguanidine	lb.	.48	.50
Diphenylguanidine	lb.	.39	.45
El-Sixty	lb.	.39	.46
Ethasan	lb.	——	1.00
Ethazate	lb.	——	1.00
Ethyl Thiurad	lb.	——	1.00
Ethyl Tuex	lb.	——	1.00
E-M-F	lb.	——	2.50
Good-rite Erie	lb.	.32	.34
Guantal	lb.	.47	.54
Hepteen	lb.	.42	.44
Base	lb.	1.80	1.85
Ledate	lb.	——	1.00
Mercaptobenzothiazole	lb.	.27	.29
Mercaptobenzothiazyl Disulfide	lb.	.35	.37
Methasan	lb.	——	1.00
Methazate	lb.	——	1.00
Monex	lb.	——	1.10
Mono Thiurad	lb.	——	1.10
Morfex	lb.	.53	.55
2-MT	lb.	.53	.55
Novac	lb.	——	1.40
A-13	lb.	65	.67
O-X-A-F	lb.	.34	.36
Pentex	lb.	.74	.77
Flour	lb.	.12¼	.12¾
Phenex	lb.	.40	.44
Pipazate	lb.	——	1.53
Pip-Pip	lb.	——	1.80
R-2 Crystals	lb.	——	1.75
RN-7 (dms.)	lb.	——	1.65
Rotax	lb.	.39	.41
SA 52	lb.	——	1.10
SA 57	lb.	——	1.00
SA 62	lb.	——	1.00
SA 66	lb.	——	1.45
SA 67	lb.	——	1.00
SA 77	lb.	——	1.00
Safex	lb.	——	1.15
Santocure	lb.	.55	.62
Selazate	lb.	——	1.45
Selenac (Ethyl, Methyl)	lb.	——	1.45
Setsit-5	lb.	.75	1.00
SPDX-GH (tons)	lb.	.64	.69
(cl.)	lb.	——	.95
Tellurac	lb.	——	1.45
Tepidone	lb.	——	1.55
Tetrone	lb.	——	1.25
A	lb.	——	1.85
Thiocarbanilide	lb.	.34	.39
Thiofide	lb.	.35	.42
Thionex	lb.	——	1.10
Thiotax	lb.	.27	.34
Thiurad	lb.	——	1.10
Thiuram E	lb.	——	1.00
M	lb.	——	1.10
Trimene	lb.	.54	.56
Base	lb.	1.03	1.06
Tuads, Ethyl	lb.	——	1.00
Tuads, Methyl	lb.	——	1.10
Tuex	lb.	——	1.10
Ultex	lb.	1.00	1.05
Unads	lb.	——	1.10
Ureka	lb.	.55	.62
Blend B	lb.	.55	.62
C	lb.	.55	.62
Vitasan Crystals	lb.	.48	.53
Vulcanex	lb.	——	.45
Z-B-X	lb.	——	2.45
Zenite	lb.	.33	.35
A	lb.	.42	.44
B	lb.	.39	.41
Zenite Special	lb.	.34	.36
Zetax (coated)	lb.	.33	.35
(uncoated)	lb.	.34	.36
Zimate, Butyl	lb.	——	1.00
Zimate, Ethyl	lb.	——	1.00
Zimate, Methyl	lb.	——	1.00

ACTIVATORS

Blue Lead, Sublimed (dlvd.)	lb.	.15¾	.16¾
Fish Oil, Hydrogenated, Fatty Acid			
Hydrofol Acid (dlvd.)	lb.	.10½	.13½
Hyfac 430 (dlvd.)	lb.	.14½	.15½
Neo-Fat H.F.O. (dlvd.)	lb.	.20	.21
Stearex Beads (dlvd.)	lb.	.28	.29½
Lime, Hydrated			
Arrowhead	ton	19.50	20.65
Sierra	ton	19.50	20.65
Litharge			
Eagle (dlvd.)	lb.	——	.1650
FSB (dlvd.)	lb.	——	.1650
Magnesium Oxide, Heavy			
General Magnesite	lb.	.05½	.08
Michigan No. 15	lb.	.0550	.0600
Permanente	lb.	.05	.06½
Magnesium Oxide, Light			
Baker's (Neoprene Grade)	lb.	——	.28
General Magnesite (Neoprene Grade)	lb.	——	.31
General Magnesite No. 101	lb.	——	.19
General Magnesite Standard	lb.	——	.22
K & M (Neoprene Grade)	lb.	——	.31
Maglite "M" (l.c.l.)	lb.	——	.31
Marine's (Neoprene Grade (l.c.l.)	lb.	——	.31
Michigan No. 30	lb.	——	.24
No. 40 Extra Light	lb.	——	.31
Witco Extra Light	lb.	.25	.27

ACTIVATORS (Cont'd)

Oleic Acid			
Emersol 210 (dlvd.)	lb.	.11	.12¾
L.C.P. Red Oil	lb.	.25½	.27¼
Red Oil (20-24 Saponified) (dlvd.)	lb.	.09½	.11¾
Palm Oil Fatty Acid (c.l.)	lb.	——	.11
Potassium Oleate (drums)	lb.	——	.29½
Red Lead			
Eagle	lb.	——	.1750
No. 2 RM (dlvd.)	lb.	——	.1750
Sodium Laurate (drums)	lb.	——	.19
Sodium Oleate—Powder (drums)	lb.	——	.35
Paste (drums)	lb.	——	.20
Sodium Stearate—Powder (drums)	lb.	——	.35
USP Grade (drums)	lb.	——	.37
Stearic Acid, Single Pressed			
Emersol 110 (dlvd.)	lb.	.13¾	.14¼
Stearex B (dlvd.)	lb.	.22	.23
Stearic Acid, Double Pressed			
Alba (dlvd.)	lb.	.16¾	.18¾
S-2-A (dlvd.)	lb.	.14½	.16½
S-2-B (dlvd.)	lb.	.13½	.15½
Stearic Acid, Other			
Neo-Fat 1-60 (dlvd.)	lb.	.19½	.20½
Neo-Fat 1-65 (dlvd.)	lb.	.22	.23
Stearite	cwt.	36.00	38.00
White Lead Basic Carbonate	lb.	.1625	.1725
White Lead Basic Sulfate	lb.	.20¼	.21¼
Zinc Laurate (c.l.)	lb.	——	.29
Laurex	lb.	.28	.29
Zinc Stearate	lb.	.40	.43
Aquazinc	lb.	.26	.35

Unclassified Activators

Actifat (dms.)	lb.	——	.18
Acidex	lb.	.09	.15
Aero Ac 50	lb.	.50	.56
165	lb.	.37	.39
Barak	lb.	——	.60
Curade	lb.	.57	.59
D-B-A	lb.	——	1.95
Delac J	lb.	.55	.57
Dibutylamine (dlvd.)	lb.	.49	.52½
MODX-B	lb.	.20	.25
NA-11	lb.	——	.65
Palmalene (drums)	lb.	——	.15
Polyac	lb.	——	1.40
Ridacto (drums)	lb.	.22	.24
Stodotte (dlvd.)	lb.	.13½	.14½
SOAC (min. 10 dms.)	cwt.	——	10.00
SOAC-KL (min. 10 dms.)	cwt.	——	10.00

ANTI-COAGULANTS

Anhydrous Ammonia (l.c.l.)	lb.	.17	.21
National (cyl., dlvd.)	lb.	.16	.20
Aqua Ammonia (l.c.l., dms.)	lb.	.0285	.0325
M.B.M. (l.c.l.)	lb.	——	.35

ANTI-FOAMING AGENTS

Aero Anti Foam H	lb.	——	.12
Regular	lb.	——	.08½
D.C. Antifoam A	lb.	6.00	6.65

ANTI-OXIDANTS

Agerite Alba	lb.	2.20	2.30
Gel	lb.	.58	.60
Hipar	lb.	.82	.84
H. P.	lb.	.61	.63
Powder	lb.	.46	.48
Resin	lb.	.63	.65
Resin D	lb.	.46	.48
Stalite	lb.	.46	.48
White	lb.	1.40	1.50
Akroflex C	lb.	.61	.63
Aminox	lb.	.46	.48
Am-x	lb.	.46	.48
Aranox	lb.	——	2.80
Benzoquinone	lb.	1.50	1.75
Betanox Special	lb.	.68	.70
B-L-E	lb.	.45	.48
Carvacrol	lb.	——	.85
Chlorcarvacrol	lb.	——	2.45
Eugenol C-95%	lb.	——	1.28
Flectol H	lb.	.46	.53
Flexamine	lb.	.61	.63
Gallic Acid, Tech.	lb.	1.10	1.23
USP or NF	lb.	1.27	1.40
Hydroquinone	lb.	.90	.90
Monomethylparaminophenol Sulfate	lb.	2.40	2.90
Neozone Standard	lb.	.66	.68
A	lb.	.48	.50
C	lb.	.52	.54
D	lb.	.46	.48
DL	lb.	.48	.50

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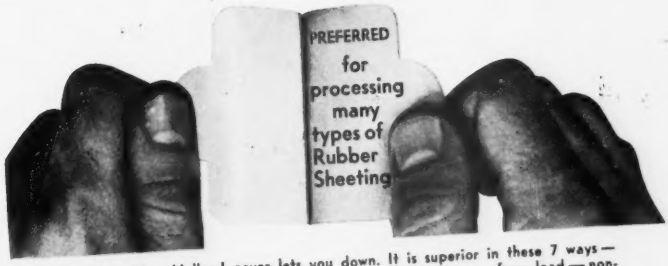
BANBURY • MIXERS • SHEETING ROLLS • COOLING TUNNEL • AIR-VEYORS

Write or wire for particulars

BOX A-9, RUBBER AGE

A Shining Example



BRATEX Rubber Holland never lets you down. It is superior in these 7 ways — surface gloss — uniform caliper — tightly filled — minimum surface load — non-flaking — pliable — peels off clean.

Three standard qualities. 20 and 40 inches wide, in 100 and 250 yard rolls. Special size rolls to order.

Write for Samples and Prices.

BRATEX RUBBER HOLLAND

THE HOLLISTON MILLS, INC., Norwood, Mass.

ANTI-OXIDANTS (Cont'd)

Oxidex	lb.	—	3.40
Parazone	lb.	—	.75
PDA-10	lb.	.36	.38
PDA-20	lb.	.36	.38
Perflectol	lb.	.61	.68
Permalux	lb.	—	1.65
Pyrogallic Acid, Resublimed USP Crystals	lb.	2.60 2.10	2.65 2.15
Resorcin, Tech. (dlvd.)	lb.	—	.64
Santoflex B	lb.	.46	.53
BX	lb.	.57	.64
Santovar-A	lb.	1.30	1.37
Santowhite (crystals)	lb.	1.65	1.72
Santowhite MK	lb.	1.40	1.52
MKS	lb.	1.25	1.37
S.C.R. (tons)	lb.	.32	.34
Stabilite	lb.	.46	.48
Alba	lb.	.69	.74
L	lb.	.48	.50
Stabilizer No. 1	lb.	—	1.65
Stabilizer No. 320	lb.	—	.80
Tannic Acid, Tech.	lb.	.70	.79
Thermoflex A	lb.	.82	.84
Thymol	lb.	—	2.50
V-G-B	lb.	.55	.57

ANTI-SCORCHING AGENTS

Armeen HT	lb.	.46	.54
Benzoic Acid—Tech.	lb.	—	.43
Good-rite Vultrol	lb.	.55	.57
Retarder PD	lb.	—	.36
Retarder W	lb.	—	.43
Sodium Acetate 60-62% Crystals	lb.	—	.06

ANTISEPTICS AND GERMICIDES

Arquad S	lb.	.24	.27
Formaldehyde (barrels)	lb.	—	.062
G-4 (bbls.)	lb.	.95	2.75
G-11	lb.	3.50	5.50
Methyl Para Hydroxy Benzoate	lb.	—	2.10
Nuodex 100 S.S. (dlvd.)	lb.	—	1.05
Nuodex 100 W.D. (dlvd.)	lb.	—	1.20
Nuodex Zinc 8% (dms.) (dlvd.)	lb.	—	.2125
Ortho Cresol (26°-27°)	lb.	—	.18
Retarder D	lb.	.68	.76
Soligen Drier—Copper 8% (drums)	lb.	—	.22½
Zinc 8% (dms.)	lb.	—	.21¼
Vancide	lb.	—	.80

ANTI-WEBBING AGENTS (for Latex)

Webnix 33	lb.	1.75	2.00

AROMATICS (DEODORANTS)

Bouquet 149	lb.	—	3.00
Coumarin	lb.	—	2.75
Curodex 19	lb.	—	4.75
188	lb.	—	5.75
198	lb.	—	6.75
D-6 Masking Perfume	lb.	—	1.35
Deodorant 65	lb.	—	1.00
Deodorant L-37	lb.	2.00	2.40
L-44	lb.	2.50	2.90
N.L.T.X.	lb.	1.85	2.15
General Deodorant 18301	lb.	—	2.40
Latex Perfume 5	lb.	—	3.25
6	lb.	—	7.50
9	lb.	—	.65
Naugaromes (dms.)	lb.	1.50	3.00
Neutroleum Delta	lb.	—	2.40
Gamma	lb.	—	3.40
Parador A	lb.	1.75	2.25
B	lb.	.70	1.00
C	lb.	2.75	3.25
D	lb.	1.50	2.00
E	lb.	.25	.55
F	lb.	—	.47
I	lb.	—	2.00
K	lb.	—	.43
GD 5280	lb.	—	2.50
GD 5348	lb.	1.90	3.25
Perfume Oil Bouquet Vamilla M	lb.	2.40	2.75
Rodo No 0	lb.	4.00	4.50
No. 10	lb.	5.00	5.50
Rubbarome (dms.)	lb.	1.05	3.80
Rubber Perfume 12	lb.	—	1.90
Russian Leather 7	lb.	—	4.10
Vanillin	lb.	3.00	3.15

BLOWING AGENTS

Ammonium Bicarbonate (dlvd.)	lb.	.0725	.1075
Blowing Agent CP-975	lb.	—	.35
Sodium Bicarbonate, U.S.P. (c.l., bags)	cwt.	—	1.85
Sponge Paste	lb.	—	.20
Unicel	lb.	—	.60
ND	lb.	—	1.50
S	lb.	—	.25
Urea	lb.	.0425	.0475

BONDING AGENTS

Durez 12987	lb.	.48	.53
Interlake Resin No. 4162	lb.	—	1.50
MDI	lb.	7.00	7.75
50	lb.	3.50	4.00
Pliobond 20	gal.	2.75	4.00
30	gal.	3.45	4.70
Reanite	gal.	6.75	7.25
Rex Compounds	gal.	1.30	2.85
Ty-Ply Q (and S)	gal.	6.75	8.00

COAGULANTS

Acetic Acid—56% (bbls.)	cwt.	8.11	8.61
Glacial—99½% (bbls.)	cwt.	14.05	14.55
Calcium Nitrate, Tech., Crystals	lb.	.12½	.15
Hydroxyacetic Acid—70% (dms.)	lb.	—	.084
Zinc Nitrate, Tech.	lb.	—	.21½

COLORING AGENTS

Black

Carbon Black—See *Reinforcing Agents*			
Aquablak B (also M, R)	lb.	.0725	.0875
Aquablak S	lb.	.08½	.09
Black Shield 4-35 (dms.)	lb.	—	.0825
Lampblack No. 10	lb.	.06	.09
Mapico Black Iron Oxide (50 lb. bags)	lb.	.1075	.1100
Raven Black Pure Iron Oxide	cwt.	10.75	11.00

Blue

Blue GD, Dispersed	lb.	—	3.95
Blue YD, Dispersed	lb.	—	2.50
Milori Blue 1184C (dlvd.)	lb.	—	.45
Monastral Fast Blue CPL	lb.	—	1.54
PCD, Dispersed	lb.	—	2.50
Ramapo Blue	lb.	3.40	3.45
Rubber Blue X-1999	lb.	—	1.00
Stan-Tone Blue	lb.	1.40	4.00
Ultramarine	lb.	.14	.30
Vansul Blue M.B.	lb.	1.00	2.30
Victoria Blue BP-262-D	lb.	2.25	2.30

Brown

Brown Iron Oxide	lb.	.1075	.12
Mapico Brown (50 lb. bags)	lb.	—	.1250

Green

Filo Green D-700 (and D-705)	lb.	—	.30
Green Chromium Oxide, Pure	cwt.	35.50	42.00
Green Chromium Oxide, Pure, Hydrated	cwt.	85.00	100.00
Green FD, Dispersed	lb.	—	1.50
Monastral Fast Green GSD, Dispersed	lb.	—	3.20
GSL	lb.	—	1.71
Permansa Green CP-594	lb.	—	1.35
Pigment Green B	lb.	—	1.35
GL-652D	lb.	.88	.93
Ramapo Green	lb.	—	4.00
Rubber Green X-1292	lb.	—	1.00
Stan-Tone Green	lb.	1.50	3.30
Utility Green	lb.	—	.30
Vansul Green M.B.	lb.	.85	2.25

Maroon

Stan-Tone Maroon	lb.	3.00	3.05
Vansul Maroon M.B.	lb.	1.05	2.65

Orange

Molybdate Orange	lb.	—	.44
Orange FD, Dispersed	lb.	—	2.75
Rubber Orange X-2065	lb.	—	2.60
Stan-Tone Orange	lb.	1.65	2.25
Vansul Orange M.B.	lb.	2.00	2.75

Red

Antimony Trisulfide	lb.	.55	.68
R. M. P. Sulfur Free	lb.	.63	.68
R. M. P. No. 3	lb.	.53	.60
Cadmium Red	lb.	.95	1.25
Cadmolith Red (bbls.)	lb.	1.20	1.45
Graphic Red (dlvd.)	lb.	—	.80
Indian Red, American, Pure	cwt.	11.50	11.75
Doxco (English)	cwt.	17.00	18.00
Mapico Red 297 (50 lb. bags)	lb.	.1150	.1175
Oximony Iron Oxide	lb.	—	.09
Red Iron Oxide, Light	cwt.	11.50	11.75
Red FBD Dispersed	lb.	—	1.65
2BD, Dispersed	lb.	—	1.65
2BL	lb.	—	1.15
Rubanox Red CP-762 (dlvd.)	lb.	—	1.40
Rubber Red CP-339 (dlvd.)	lb.	—	1.05
Rubber Red RT-364	lb.	—	.75
Rubber Red RT-425	lb.	—	.75
Rubber Red X-1148	lb.	—	.80
Rubbered	lb.	.16	.18
Solfast Red CP-663 (dlvd.)	lb.	—	1.80
CP-787 (dlvd.)	lb.	—	1.30
Stan-Tone Red	lb.	1.10	3.05
Sun Burnt Red	lb.	.16	.18
Vansul Red M.B.	lb.	.80	2.30
Watchung Red	lb.	—	1.80

White—Lithopone

Albalith	lb.	.06¼	.06½
Astrolith	lb.	.06¼	.06⅝
Cryptone No. 19	lb.	.08	.08¼
CB No. 21	lb.	.08	.08¼
Eagle	lb.	.06½	.06½
Permalith	lb.	.06½	.06⅝
Ponolith	lb.	.06¼	.06⅝
Sunolith	lb.	.06¼	.06⅜

White—Titanium Pigments

Rayox	lb.	.19¼	.23½
Ti-Cal	lb.	.07⅜	.08¼
Ti-Pure	lb.	.21½	.22½
Titanox A—all grades (dlvd.)	lb.	.19¼	.20½
B-30 (dlvd.)	lb.	.07	.07½
C (dlvd.)	lb.	.06¼	.07¼
RA—all grades (dlvd.)	lb.	.21½	.22½
RC-HT (dlvd.)	lb.	.07½	.08
Unitane O-220	lb.	.195	.205
OR-250	lb.	.215	.225
Zopaque	lb.	.19½	.20½

White—Zinc Oxide (American Process)

AZO-ZZZ 11 (and 22, 33, 44, 55)	lb.	.11	.11¼
Eagle	lb.	.11	.11¼
Horse Head Special	lb.	.11	.11¼
XX Red	lb.	.11	.11¼
XX-505	lb.	.12½	.12¾
Protox 166	lb.	.11	.11¼
St. Joe Black Label	lb.	.11	.11¼
Green Label	lb.	.11	.11¼
Red Label	lb.	.11	.11¼

White—Zinc Oxide (Dispersed)

Dispersed Zinc Oxide	lb.	—	13

White—Zinc Oxide (French Process)

AZO-ZZZ 66	lb.	.13¼	.13½
Eagle Green Seal	lb.	.12¾	.13
Eagle Red Seal	lb.	.12¼	.12½
Eagle White Seal	lb.	.13¼	.13½
Florence Green Seal	lb.	.12¾	.13
Red Seal	lb.	.12¼	.12½
White Seal	lb.	.13¼	.13½
Kadox 25	lb.	.13¼	.13½
Kadox 15, 17 and 72	lb.	.11	.11¼
U. S. P. 12	lb.	.14¼	.14½

White—Zinc Sulfide

Cryptone ZS-800	lb.	.13¼	.13½

Yellow

Anchor Brand Pure Iron Oxide	cwt.	9.00	9.25
Cadmolith Yellow (bbls.)	lb.	—	.95
Chrome Yellow	lb.	—	.32
Chrome Yellow 12310	lb.	—	.34
Ferrox	cwt.	7.50	8.50
Mapico Yellow (50 lb. bags)	lb.	.0900	.0925
Rubber Yellow X-1940	lb.	—	1.60
Stan-Tone Yellow	lb.	1.20	1.75
Toluidine Yellow	lb.	—	1.70
YL-556-D	lb.	—	.82
Oximony Iron Oxide	lb.	—	.06¾
Vansul Yellow M.B.	lb.	.90	1.00
Yellow GD, Dispersed	lb.	—	1.85
GL	lb.	—	1.35
Zinc Yellow	lb.	—	.24

DESTABILIZING AGENTS (for Latex)

D-Stayb	lb.	—	1.60

DISPERSING AGENTS

Agchem SA-19	lb.	—	.30
SA-20	lb.	—	.70
Aquasol AR 90%	lb.	—	.24¾
Armeen 18	lb.	.52	.60
Beaconol 52	lb.	.60	.75
Darvan No. 1 (and No. 2)	lb.	.21	.30
Daxad 11 (21, 23)	lb.	.08	.35
Dilex	lb.	—	.32
Dispersaid	lb.	1.25	1.35
Halloid	lb.	.03¾	.09½
HornKem No. 1	gal.	—	1.60
No. 3G	gal.	—	1.75
No. 12	lb.	—	.17
Lomar PW	lb.	.16	.18
Marasperse CB	lb.	.11½	.15
N	lb.	.09	.10
Rubbex	lb.	—	.27½
Stan-Chem BQC	lb.	.12¼	.17¾
1067	lb.	—	.13½
1471	lb.	.1687	.2187
2251	lb.	.12¼	.17¾
Trenamine D-25	lb.	.32½	.36
D-100	lb.	.48	.51
Triethanolamine (drums) (dlvd.)	lb.	.21½	.22½
Triton R-100	lb.	.15½	.26
Yelkin TT	lb.	—	.22
Zinsper	lb.	—	.15

EXTENDERS

Advagum 1098	lb.	—	.65
Bunaweld Polymer No. 780	lb.	—	.22
No. 5514	lb.	—	.30
D-92 (and D-93) (dms.)	lb.	—	.12
Extender 600	lb.	—	.1790
PR-162 Latex (dms.)	gal.	1.00	1.60
Synprolac	lb.	—	.19
Synprowax	lb.	.16	.19
Vistanex	lb.	—	.32

FILLERS (Inert and Reinforcing)

Abrasives			
Carbonite	lb.	.15	.95
Lionite	lb.	.09¼	.90
Pumice	lb.	.03	.05
Aluminum Hydrate	lb.	—	.17

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FILLERS (Cont'd)

Aluminum Silicate			
Silical	ton	37.00	- 55.00
Marter White	ton	18.50	- 30.00
Barium Carbonate (l.c.l.)	ton	72.50	- 90.00
Barytes			
No. 1 Floated, White	ton	34.85	- 49.65
No. 2 Floated, Unbleached	ton	——	- 32.85
No. 22 Barytes (c.l.)	ton	——	- 18.37
Foam A	ton	——	- 34.85
Bentonite (c.l.)	ton	——	- 11.50
SPV Volclay (c.l.)	ton	——	- 11.50
Blanc Fixe	ton	72.50	-120.00
Calcium Carbonate			
Atomite (c.l.)	ton	——	- 30.00
B.I. White No. 1 (c.l.)	ton	——	- 7.50
B.I. White No. 2 (c.l.)	ton	——	- 7.00
B.I. White No. 390 (c.l.)	ton	——	- 5.75
Blue-Star XX	ton	——	- 15.00
Calcene T	ton	45.00	- 55.00
Camelwite	ton	——	- 30.00
Kalite (c.l.)	ton	——	- 40.00
Lesamite (c.l.)	ton	——	- 27.50
Lim-Cal (c.l.)	ton	——	- 12.50
Millical (c.l.)	ton	——	- 27.50
Multitex	ton	——	-105.00
Non-Fer-Al	ton	——	- 20.00
Sierracal	ton	15.00	- 18.50
Super Multitex	ton	——	-145.00
Suspenso (c.l.)	ton	——	- 22.00
Witcarb R (c.l.)	ton	——	-105.00
R-12 (c.l.)	ton	40.00	- 60.00
York White	ton	——	- 9.00
Calcium Silicate			
Silene EF	ton	110.00	-120.00
Calcium Sulfate, Anhydrous			
Snow White Filler	ton	——	- 18.00
Calcium Sulfate, Hydrous			
Crysta-Cal (c.l.)	ton	——	- 12.50
Terra Alba No. 1	ton	12.00	- 14.40
Chalk Whiting (l.c.l.)	lb.	.0150	- .0175
Recco Paris Whiting	ton	——	- 28.00
Clay			
Alsilite (c.l.)	ton	14.00	- 22.50
Alsite (c.l.)	ton	——	- 14.00
Aluminum Flake	ton	16.50	- 36.00
A.S.P. No. 1 (c.l.)	ton	——	- 35.00
No. 11 (c.l.)	ton	——	- 40.00
Buca (c.l.)	ton	——	- 45.00
Burgess No. 20	ton	——	- 35.00
No. 30	ton	——	- 37.00
Burgess Iceberg	ton	——	- 50.00
Burgess Polyclay	ton	——	- 45.00
Catalpo (c.l.)	ton	——	- 35.00
Champion	ton	——	- 14.00
C.S.D. (c.l.)	ton	——	- 13.00
Crown	ton	——	- 14.00
Dixie (c.l.)	ton	——	- 14.00
Hi-White R	ton	15.00	- 33.00
Hydratex R	ton	30.00	- 50.00
Kaolloid Clay (c.l.)	ton	——	- 10.50
Markham (c.l.)	ton	14.00	- 33.80
McNamee (c.l.)	ton	——	- 13.50
Oldham (c.l.)	ton	——	- 15.00
Paragon	ton	13.50	- 34.50
Pigment 33	ton	——	- 37.00
Recco (c.l.)	ton	——	- 14.00
Stellar-R	ton	——	- 80.00
Suprex	ton	14.00	- 35.00
Upton	ton	19.50	- 21.50
Whitetex (c.l.)	ton	——	- 50.00
Witco No. 1 (c.l.)	ton	13.00	- 33.00
No. 2 (c.l.)	ton	13.00	- 33.00
Diatomaceous Earth	ton	30.00	- 50.00
Kaylorite (c.l.)	ton	——	- 30.00
Dolomite (c.l.)	ton	11.00	- 12.00
Flock			
Cotton, white and colored	lb.	.10	- .20
Fiffloc F 40-9000	lb.	——	- .16
Fiffloc F 6000	lb.	——	- .22
Rayon, bleached or dyed	lb.	.81	- 1.50
Rayon, grey	lb.	——	- .18
Rayon, pink	lb.	——	- .14
Solka-Floc (l.c.l.)	lb.	.05	- .15
Wool, bleached or dyed	lb.	.70	- 1.00
Glue, Bone (dlvd.)	lb.	.16½	- .18½
Graphite	lb.	.05	- .20
Ground Glass (l.c.l.)	lb.	.04	- .06
Leather, Shredded	lb.	.05	- .17
Lignin	lb.	.03	- .06
Indulin	lb.	——	- .09
Limestone, Pulverized	ton	3.25	- 10.00
Micro Velva	ton	45.00	- 47.00
Velvet Filler, Regular	ton	20.00	- 22.00
Magnesium Carbonate	lb.	.09	- .10
K & M Clearcarb	lb.	.1175	- .1225
Magnesium Oxide	lb.	.05	- .06
Magnesium Silicate	ton	18.00	- 35.00
Airex	ton	22.50	- 23.50
Asbestol	ton	20.00	- 22.00
Blue Star Talc	ton	——	- 23.00
L.S. Silver	ton	23.50	- 25.50
Sierra White	ton	21.25	- 23.25
Mica	lb.	.01¼	- .07¾
Concord	lb.	.0675	- .0750
Micro-Mica	lb.	.06¾	- .07½
Mineralite (c.l.)	ton	25.00	- 40.00
Silversheer	lb.	.06¾	- .07½
Triple A Mica (c.l.)	ton	——	- 25.00
Vermiculite	lb.	.075	- .085
Wet Ground Biotite Mica	lb.	.05½	- .06¼
Wet Ground Mica No. 160	lb.	.06¾	- .07½
Mineral Black			
Keystone 126	ton	15.00	- 20.00

FILLERS (Cont'd)

Pyrophyllite			
Pyrax A (c.l.)	ton	——	- 12.50
WA (c.l.)	ton	——	- 15.00
Silica	ton	16.00	- 27.00
Blue Star	ton	——	- 21.50
Slate, Powdered (l.c.l.)	ton	15.00	- 20.00
Talc, Domestic	ton	9.00	- 20.00
Walnut Shell Flour	ton	38.00	- 80.00
Whiting, Commercial	ton	——	- 12.00
Cameline (c.l.)	ton	8.50	- 10.00
C-C-O White	ton	——	- 17.00
Keystone (c.l.)	ton	——	- 16.00
Rambo No. 1 White	ton	——	- 6.50
No. 6 White	ton	——	- 9.00
Snowflake (c.l.)	ton	——	- 18.00
Veroc (c.l.)	ton	——	- 6.50
Welco (c.l.)	ton	——	- 6.00
York White R (c.l.)	ton	——	- 8.00
Wood Flour	ton	20.00	- 62.18

FINISHING MATERIALS, SURFACE

Beaco Finishes	gal.	1.05	- 1.35
Black Out	gal.	4.50	- 8.00
Shellac, Orange Gum	lb.	.65	- .85
VanWax	gal.	1.25	- 1.30

FLAME RETARDANTS

Celluflux	lb.	.36½	- .38½
Chlorinated Paraffin	lb.	.10	- .25
Halowax	lb.	.24	- .39
Zinc Borate 3167	lb.	.12	- .12½
Zyrox	lb.	.65	- .79

LUBRICANTS, MOLD

Aquadag	lb.	3.15	- 3.45
Aquarex BBX Conc.	lb.	——	- .78
D	lb.	——	- .76
L Paste	lb.	——	- .85
MDL Paste	lb.	——	- .30
WA Paste	lb.	——	- .35
Akro Gel	lb.	——	- .165
Borax, Granular (l.c.l.)	ton	70.00	- 80.00
Colite Concentrate (dms.)	gal.	——	- 90
Concentrex	lb.	——	- .25
D.C. 7 Compound	lb.	6.20	- 6.80
D.C. Emulsion No. 35	lb.	1.84	- 3.50
D.C. Mold Release Fluid	lb.	4.90	- 6.00
Dipex	lb.	.14	- .18
Dri-Lube	lb.	——	- .22
Erlen Mold Lubricant	gal.	1.25	- 1.50
Glydag	lb.	1.30	- 2.00
Hawkeye Flake (dlvd.)	lb.	——	- .15
Kokobace	lb.	——	- .12
Latex-Lube (dlvd.)	lb.	——	- .20½
Liqui-Lube (dlvd.)	lb.	——	- .15¾
Lubrex	lb.	.25	- .30
Migralube	lb.	——	- .37
Moldeze No. 1	gal.	——	- 36.00
No. 3	gal.	——	- 7.50
Mold Lubricant No. 72 Conc.	gal.	2.50	- 5.50
No. 735	gal.	1.26	- 2.75
Mold-Slick	lb.	.202	- .215
Orvus WA Paste (dms.)	lb.	——	- .25
Prodag	lb.	.25	- .38
Purity Flake (dlvd.)	lb.	——	- .17
Redotex Flakes (dlvd.)	lb.	.15⅛	- .16
Powder (dlvd.)	lb.	.15⅞	- .16½
Rubber-Flo	gal.	——	- 1.15
Rubber-Glo	gal.	——	- .94
Rusco Mold Paste	lb.	——	- .25
Sericite (l.c.l.)	ton	65.00	- 75.00
Thermalube	lb.	——	- .11
Ulco Mold Soap	lb.	.16	- .29
Werkrite Flakes (dlvd.)	lb.	.11⅞	- .12½
Powder (dlvd.)	lb.	.12⅝	- .13¼

LUBRICANTS, RUBBER

Extrud-o-Lube	gal.	——	- 1.57
G.B Naphthenic Neutrals	gal.	.12	- .18
Propylene Stearate (drums)	lb.	——	- .40

LUBRICANTS, RUBBER SURFACE

Barium Stearate	lb.	.48	- .49
Calcium Stearate	lb.	.39	- .40
Glycerized Lubricant	gal.	——	- 1.25
Polyethylene Glycol	lb.	.25	- .26
Rexanol	lb.	——	- .13
Separex	lb.	——	- .15
Slab-Dip	lb.	——	- .15
Wet-Zinc	lb.	——	- .25
Zinc Stearate	lb.	.40	- .43

MOLD CLEANERS

Actusol (dlvd.)	gal.	——	- 1.45
Metso 99	cwt.	3.75	- 5.40
Granular	cwt.	3.25	- 4.75
Rubber-Sol	gal.	——	- 2.75
Shelblast	ton	80.00	-140.00
Sprex A.C. (dlvd.)	lb.	——	- .15½

PEPTIZING AGENTS

Peptizer P-12	lb.	.84	- .90
RPA 2	lb.	——	- .65
3	lb.	——	- .46
5	lb.	——	- .57

PLASTICIZERS & SOFTENERS

AA (drums)	lb.	——	- .22
Acto 500	lb	——	- .09
Adipol BCA (dms.)	lb.	.44½	- .45
2EH	lb.	.47	- .47½
10A	lb.	.47	- .47½

PLASTICIZERS & SOFTENERS (Cont'd)

Amalgamator Z-4	lb.	——	- .30
American Pine Tar	lb.	.0350	- .0473
Arneel	lb.	.29	- .34
Arolene 1980 (c.l.)	lb.	——	- .10
Bardol	lb.	.02½	- .03½
B	lb.	.05½	- .05¾
Bayol D	gal.	——	- .382
F	gal.	——	- .52
Beeswax, Refineo & Bleached	lb.	.64	- .74
Yellow Refined	lb.	.63½	- .68
Bondogen	lb.	.55	- .60
B.R.C. No. 20	lb.	.0125	- .0135
B.R.H. 2	lb.	.02	- .029
BRS 700	lb.	.0175	- .026
B.R.T. 3	lb.	.024	- .025
4	lb.	.0225	- .0235
7	lb.	.0265	- .0275
B.R.V.	lb.	.0325	- .049
Bunarex Resins	lb.	.06	- .0750
Bunatak M	lb.	——	- .20
O	lb.	——	- .18
R	lb.	——	- .14
U	lb.	——	- .15
No. 21	lb.	——	- .08
No. 90	lb.	——	- .08
No. 865	lb.	——	- .17
No. 1080	lb.	——	- .09½
Burgundy Pitch	lb.	.1026	- .1050
Butac	lb.	.11	- .12
Butoxyethyl Diglycol Carbonate	lb.	.40	- .41
Butyl Benzyl Sebacate	lb.	.52	- .54½
Butyl Carbitol Perlargonate (dms.)	lb.	——	- .64
Butyl Cellosolve Perlargonate (dms.)	lb.	——	- .68
Butyl Palmitate	lb.	——	- .26½
Butyl Roleate	lb.	.176	- .18
Butyl Stearate-Tech. (dms.)	lb.	.27	- .29½
CP (dms.)	lb.	.29½	- .42
BWH-1	lb.	——	- .14
Califlux 510, 550	lb.	.025	- .0325
G.P.	lb.	.0125	- .02
R-100	lb.	.05	- .0575
TT	lb.	.02	- .02¾
Campol (t.c.)	ton	——	- 42.00
Candelilla Wax Prime	lb.	.67	- .75
Capryl Benzyl Sebacate	lb.	.59½	- .62
Carbonex	lb.	.0325	- .0375
S Flakes	lb.	.04	- .045
S Plastic	lb.	.0385	- .0435
644	lb.	.0375	- .0425
Carbowax 4000 (drums)	lb.	.31	- .32
Cardolite 615	lb.	.37	- .40
816	lb.	.25½	- .28½
5858	lb.	.42	- .46
Carnauba Wax, Crude	lb.	.73	- .82
Refined	lb.	.81	- .85
Substitute	lb.	.45	- 1.08
Yellow	lb.	1.15	- 1.20
Celluflex	lb.	.36½	- .38½
Ceresine Wax	lb.	.14	- .26
Contogum	lb.	.06¾	- .10¼
Cumar Resins	lb.	.05½	- .14½
D.C. 200 Fluid	lb.	5.20	- 6.00
D.B.M.	lb.	——	- .30
Degras, Common	lb.	.12	- .14
Diamylphenol (l.c.l., dms.)	lb.	——	- .28
Dibenzyl Sebacate	lb.	.65	- .67½
Dibutoxethyl Sebacate	lb.	——	- .5634
Dibutyl Phthalate	lb.	——	- .32
Dibutyl Sebacate—Tech.	lb.	.47½	- .50
CP	lb.	.49½	- .52
Dicapryl Adipate	lb.	.41	- .43½
Dicapryl Phthalate	lb.	.38½	- .41
Dicaprvl Sebacate	lb.	.53	- .55½
Di-Carbitol Phthalate (dms.)	lb.	.43½	- .44
Dicyclohexyl Phthalate	lb.	——	- .43
Dielex	lb.	.0625	- .0650
Diethyl Phthalate (t.c.)	lb.	——	- .32
Dihexyl Adipate	lb.	.32½	- .35
Dihexyl Phthalate	lb.	.29	- .31½
Dihexyl Sebacate	lb.	.41	- .43½
Di Isobutyl Azelate (dms.)	lb.	——	- .715
Di-iso-octyl Adipate (dms.)	lb.	.42	- .44½
Dimethyl Phthalate	lb.	——	- .22
Dimethyl Sebacate	lb.	.68	- .70½
Dinopol (dms.)	lb.	.523	- .533
Dioctyl Phthalate (dms.)	lb.	.44½	- .45½
Dioctyl Sebacate (dms.)	lb.	.54	- .56½
D.I.O.P. (dms.)	lb.	.40	- .45½
Dipolymer Oil	gal.	.33	- .38
Dispersing Oil No. 10	lb.	.0525	- .055
Dutrex A (B, 5, 6)	lb.	.02½	- .03¾
15	gal.	.10	- .189
20, 21, 25	lb.	——	- .03
Elastex 10-P	lb.	.40	- .42½
50-B	lb.	.34½	- .37
DCHP	lb.	.42½	- .43½
Estac	lb.	——	- .16
Ethox (dms.)	lb.	.44½	- .45
Flexol B-400	lb.	.28½	- .29
DOP	lb.	.42½	- .43½
TOF	lb.	.48½	- .49
3GH	lb.	.43½	- .44
3GO	lb.	.53	- .53½
4GO	lb.	.37½	- .38
8N8	lb.	.39	- .39½
Galex W-100	lb.	.13½	- .15
G. B. Light Process Oil	lb.	.025	- .0325
Harflex 500 (dmsg.)	lb.	.34	- .36½
Hercoyln (dlvd.)	lb.	.1675	- .1725
Herron-H.T.	gal.	.2400	- .2700
Herron-Plas	lb.	.0350	- .0375

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PLASTICIZERS & SOFTENERS (Cont'd)

Herron-Wax	lb.	.0500 -	.0550
HT-300	lb.	.45¼ -	.53
Indonex 632½ (63⅓%, 634½, 638⅓)	gal.	.1200 -	.1700
Indopol H-300 (bbls.)	gal.	1.28 -	1.32
JMH	lb.	— -	.85
Kapsol	lb.	— -	.42
KP 23 (dms.)	lb.	.39½ -	.40
70 (dms.)	lb.	.41 -	.41½
120 (dms.)	lb.	— -	.40
140 (dms.)	lb.	.49½ -	.50
150 (dms.)	lb.	.41½ -	.42
201	lb.	— -	.43
Kronisol (drums)	lb.	.41 -	.41½
Kronitex (drums)	lb.	.38 -	.38½
Lanolin, Tech. Anhydrous	lb.	.16 -	.18
Lead Oleate	lb.	.16½ -	.42
Lindol	lb.	.37 -	.38½
2-Mercaptoethanol (drums)	lb.	— -	.75
Methox (dms.)	lb.	.41 -	.41½
Methyl Laurate	lb.	.25 -	.27
Methyl Oleate	lb.	— -	.20
Methyl Stearate	lb.	— -	.70
Monoplex DBS	lb.	.58 -	.59
Monoplex DCP	lb.	.40½ -	.41
Monoplex DOS	lb.	.69 -	.70
5 (dms.)	lb.	.70 -	.71
11 (dms.)	lb.	.50 -	.51
16 (dms.)	lb.	.45 -	.46
Montan Substitute No. 506	lb.	.32 -	.33
Montan Wax, Crude	lb.	.30 -	.35
Montan Wax (c.l.)	lb.	.52 -	.55
Monty Wax	lb.	— -	.35
Natac	lb.	.1050 -	.1150
Neolene 210 (t.c.)	lb.	— -	.16
212 (t.c.)	lb.	— -	.14
220 (t.c.)	lb.	— -	.15
Nerium	lb.	— -	.09
Nevillac Resins (dms.)	lb.	.23 -	.45
Neville Resins (dms.)	lb.	.10½ -	.15½
Nevindene Resins (dms.)	lb.	.12½ -	.15½
Nevinol (dms.)	lb.	— -	.17
Nevoil	lb.	.0325 -	.0425
Nevtex 10 (dms.)	lb.	— -	.10½
Nuba 1 (and 2) (dms.)	lb.	— -	.04
3X (dms.)	lb.	— -	.065
15 (and 30) Oil (dms.)	lb.	— -	.24
781 Oil (dms.)	lb.	— -	.27
No. 480 Oil Proof Resin	lb.	— -	.15
Obopex Q10 (dms.)	lb.	.44½ -	.45½
Opalwax	lb.	.37 -	.38
Ortho-Nitrobiphenyl	lb.	.06 -	.11
Ozokerite Wax No. 64			
White	lb.	.31 -	.32
Yellow	lb.	.25 -	.26
P-1 (and 4, 6, 8, 20)	lb.	.29½ -	.33½
P-75	lb.	.66 -	.72
Pale 4 (and 1000)	lb.	— -	.24
Palm Oil	lb.	— -	.11
Paradene Resins (dms.)	lb.	.065 -	.075
Para Flux (dms.)	gal.	.1825 -	.1925
2016 (l.c.l.)	gal.	.22 -	.23
Para Lube (l.c.l.)	lb.	.046 -	.048
Paraplex G-25	lb.	.76 -	.77
G-40	lb.	.43 -	.44
G-50	lb.	.39½ -	.40½
Parmo	lb.	.06 -	.13¾
Pepton 22	lb.	.72 -	.75
PG-16 (drums)	lb.	— -	.23½
Philplast No. 1	gal.	.18 -	.35
No. 2	gal.	.13 -	.35
Picco 10 (and 25)	lb.	— -	.12
75 (and 100)	lb.	— -	.11½
Rubber Resin 100	lb.	.13¼ -	.13¾
S.O.S.	gal.	.29 -	.34
Piccocizer 30	lb.	.05½ -	.06
Piccolastic A (and B, C, D, E)	lb.	.22 -	.22½
F	lb.	.139 -	.144
Piccolyte S Resins	lb.	.1500 -	.1575
Piccolyte WW Resins	lb.	.45 -	.47
Piccoumaron Resins	lb.	.06½ -	.14½
Piccowar	lb.	.12 -	.12½
Piccowol	lb.	.02½ -	.04
Pictar	gal.	.25 -	.30
Plas-Blend 360	lb.	.03 -	.04
Plastac M	lb.	— -	.09¼
Plasticizer 2286	lb.		.25
Plasticizer SC	lb.	.49 -	.52
Plasticizer VA-1	lb.	— -	.40
Plasticizer XP-3	lb.	— -	.50
Plastoflex 3	lb.	— -	.50
50	lb.	— -	.38
J-21	lb.	— -	.41
Plastogen	lb.	.07¼ -	.08
Plastolein 9050	lb.	— -	.45
9055	lb.	— -	.37
9058	lb.	— -	.45
9250	lb.	— -	.32
9715	lb.	— -	.36
Plastolein X-55 (dms.)	lb.	— -	.60
X-148 (dms.)	lb.	— -	.70
Plastone	lb.	.27 -	.30
Polymel D	lb.	— -	.20
Polymel Liquid	gal.	.12 -	.17
Polymel Resins	lb.	.029 -	.05
Process Oil C-225 (c.l.)	gal.		.27
PT 409 Pine tar (600, 800) (t.c., dms.)	gal.	.34½ -	.45½
Reogen	lb.	.12½ -	.12
465 Resin (drums)	lb.	— -	.05
Resin 731-C	cwt.	— -	14.75
Resin C	lb.	.02 -	.0285
Resinex	lb.	.03¼ -	.04
L-4	lb.	.02¼ -	.03

PLASTICIZERS & SOFTENERS (Cont'd)

Ridbo 369 (drums)	lb.	.08 -	.09
369-F (drums)	lb.	— -	.12
Rosin Oil	gal.	.54 -	1.20
R.P.A. No. 2	lb.	— -	.65
No. 3	lb.	— -	.46
No. 5	lb.	— -	.57
R.S.O. Softening Oil	lb.	.03 -	.05
Rubberol	lb.	— -	.21½
Rubtar	gal.	— -	.40
Santicizer B-16	lb.	.50 -	.57
E-15	lb.	.47 -	.54
M-17	lb.	.44 -	.51
No. 140	lb.	.31 -	.38
Sealol 42	gal.	— -	1.10
Softener No. 20	gal.	.09 -	.25
S.P.C.	lb.	— -	.19½
Stanolind Petrolatum	lb.	.037 -	.081
Wax	lb.	.25 -	.30
Staybelite Resin (dms.)	lb.	— -	.11
Sunny South Burgundy Pitch	cwt.	7.51 -	7.96
Sunny South Pine Tar	lb.	.0350 -	.0473
Sunny South Rosin Oil	gal.	.47 -	.49
Superla Wax	lb.	.25 -	.30
Syncera Wax	lb.	.175 -	.225
Synplasticizer	lb.	— -	.10
Syn Tac (c.l.)	gal.	— -	.33
Tar, Refined	gal.	.12 -	.17
R-Tarnel NR (t.c.)	lb.	— -	.0851
Terpene A	gal.	— -	.65
TP-90B	lb.	— -	.65
TP-95	lb.	— -	.55
TP98	lb.	— -	.50
Triacetin	lb.	.34 -	.45
Tricresyl Phosphate	lb.	.36½ -	.38½
Turgum S	lb.	.09½ -	.10½
Vanadiset A	gal.	.13 -	.20
Vanadiset B, C, D	lb.	.022 -	.055
Pulverized	lb.	.064 -	.09
Solution	gal.	.40 -	.65
Vistac No. 1	gal.	— -	1.32
No. 2	gal.	— -	1.66
No. 4	gal.	— -	1.80
Witresin—Granular	ton	41.00 -	43.00
Solid	ton	36.00 -	38.00

PROCESSING AIDS

Castor Oil, Processed (dms.)	lb.	— -	.24
Refined (drums)	lb.	— -	.15¾
Castorwax (min. 400 lbs.)	lb.	— -	.31
Dutrex 7	lb.	.02½ -	.03¾
30	gal.	.24 -	.27
ELA	lb.	— -	.80
Heron S.P.O.	lb.	.22 -	.23
Millrex	lb.	— -	.15
Resin No. 510	lb.	.13½ -	.16½

PROTECTIVE & STABILIZING AGENTS

Acacia	lb.	.12¾ -	.21
Agchem SA-9 (to SA-12)	lb.	.65 -	1.02
Alpha Protein	lb.	.19 -	.23
Arcostocrat	lb.	— -	.07½
Carob Bean Flour	lb.	.33 -	.35
Casein	lb.	.28 -	.35
Ethylene Diamine 68%	lb.	.57 -	.58
Karaya Gum	lb.	.20 -	.50
Prosein	lb.	.0575 -	.0605
Rex Compound No. 2801	lb.	— -	.15
Sodium Alginate	lb.	— -	1.50
Stablex B	lb.	— -	.95
Tragacanth Flakes	lb.	.60 -	1.35

RECLAIMING AGENTS

Armeers C	lb.	.50 -	.58
T	lb.	.42 -	.50
No. 517 H.B. Oil	gal.	.11½ -	.16½
535	gal.	.22 -	.27
C-6 Oil (and 28, 32)	gal.	.33 -	.38
C-10 Oil	gal.	.25 -	.30
C-33 Oil	gal.	.20 -	.25
Caustic Soda—Flake 76% (c.l., drums)	cwt.	— -	3.45
Liquid 50% (t.c.)	cwt.	— -	2.40
Solid 76% (c.l., dms.)	cwt.	2.50 -	3.05
Cresylic Acid (99-100%)	gal.	1.55 -	1.69
D-4	gal.	.23 -	.28
E-5	gal.	.21 -	.26
G. B. Reclaiming Oil	gal.	.12 -	.18
Heavy Aromatic Naphtha (t.c.)	gal.	— -	.125
LX-77 Reclaiming Solvent	gal.	.18 -	.24
LX-572 Reclaiming Oil	gal.	.23 -	.28
Neo-Fat D-242	lb.	.05½ -	.07¾
PT 67 Light pine oil	gal.	.60 -	.70
PT 101 Pine tar oil	gal.	.32 -	.43
PT 150 Pine solvent	gal.	.44 -	.45
Q Oil	gal.	.246 -	.296
Reclaiming Oil 1621	lb.	.03 -	.04
Reclaiming Oil 3186 (t.c.)	gal.	— -	.28
Reclaiming Oil 3186-G	gal.	— -	.25
Reclaiming Reagent No. 4	lb.	.12 -	.15
Reclaiming Resin No. 1	gal.	.15 -	.35
R.P.A. No. 3	lb.	— -	.46
Soda Ash (c.l., bags)	cwt.	— -	1.40
Solvent 534	gal.	.22 -	.27
Solvent Oil 21	gal.	.24 -	.29
C-42	gal.	.27 -	.32
Union Solvent 4060-O	gal.	— -	.199
X-1 Resinous Oil	lb.	.0175 -	.0250
X-60 Solvent	gal.	.24 -	.32

REINFORCING AGENTS—CARBON BLACK

Channel, Hard Processing (HPC) (bags)

Atlantic HPC-98	lb.	.0690 -	.1175
Continental F	lb.	.0690 -	.1125
Croflex	lb.	.0690 -	.1125
Crow	lb.	.0690 -	.1125
Dixiedensed (and S)	lb.	.0690 -	.1125
Kosmobile (and S)	lb.	.0690 -	.1125
Kosmos T	lb.	.0690 -	.1125
Micronex HPC	lb.	.0690 -	.1125
Spheron 4	lb.	.0690 -	.1170
Witco Disperso No. 6	lb.	.0690 -	.1125

Channel, Medium Processing (MPC) (bags)

Atlantic MPC-95	lb.	.0690 -	.1175
Continental A	lb.	.0690 -	.1125
Croflex TH	lb.	.0690 -	.1125
Dixie R-1	lb.	.0690 -	.1125
Dixiedensed HM (and S-66)	lb.	.0690 -	.1125
Huber Arrow TX	lb.	.0690 -	.1150
Kosmobile HM (and S-66)	lb.	.0690 -	.1125
Kosmos M	lb.	.0690 -	.1125
Micronex Standard	lb.	.0690 -	.1175
Spheron 6	lb.	.0690 -	.1170
Texas M	lb.	.0690 -	.1125
Witco Disperso No. 1	lb.	.0690 -	.1125

Channel, Easy Processing (EPC) (bags)

Atlantic EPC E-42	lb.	.0690 -	.1175
Continental AA	lb.	.0690 -	.1125
Croflex 77	lb.	.0690 -	.1125
Dixiedensed 77	lb.	.0690 -	.1125
Kosmobile 77	lb.	.0690 -	.1125
Micronex W-6	lb.	.0690 -	.1175
Spheron 9	lb.	.0690 -	.1170
Texas E	lb.	.0690 -	.1125
Witco Disperso No. 12	lb.	.0690 -	.1125
Wyex	lb.	.0690 -	.1150

Channel, Conductive (CC) (bags)

Dixie 5 dustless	lb.	.0832 -	.1375
Kosmink dustless	lb.	.0832 -	.1375
Spheron C	lb.	.1200 -	.1600
Spheron N	lb.	.2200 -	.2500
Voltex	lb.	.1500 -	.1850

Furnace, Fast Extruding (FEF) (bags)

Statex M	lb.	.0550 -	.0950

Furnace, High Modulus (HMF) (bags)

Continex HMF	lb.	.0500 -	.0900
Dixie 40	lb.	.0500 -	.0900
Dixie 50	lb.	.0550 -	.0950
Kosmos 40	lb.	.0500 -	.0900
Kosmos 50	lb.	.0550 -	.0950
Modulex	lb.	.0500 -	.0900
Philblack A	lb.	.0550 -	.0950
Statex 93	lb.	.0500 -	.0900
Sterling L	lb.	.0500 -	.0900
Sterling SO	lb.	.0550 -	.0950

Furnace, Reinforcing (RF) (bags)

Dixie 60	lb.	.0740 -	.1125
Kosmos 60	lb.	.0740 -	.1125

Furnace, Semi-Reinforcing (SRF) (bags)

Continex SRF	lb.	.0350 -	.0775
Dixie 20	lb.	.0350 -	.0775
Essex	lb.	.0350 -	.0775
Furnex	lb.	.0350 -	.0750
Gastex	lb.	.0350 -	.0775
Kosmos 20	lb.	.0350 -	.0775
Pelletex	lb.	.0350 -	.0775
Seminex	lb.	.0350 -	.0775
Sterling NS	lb.	.0350 -	.0775
Sterling R	lb.	.0350 -	.0775
Sterling S	lb.	.0350 -	.0775

Furnace, Fine (FF) (bags)

Statex B	lb.	.0575 -	.0975
Sterling 99	lb.	.0650 -	.1050
Sterling 105	lb.	.1200 -	.1600

Furnace, High Abrasion (HAF) (bags)

Aromex	lb.	.0740 -	.1125
Philblack O	lb.	.0745 -	.1145
Vulcan 1	lb.	.0740 -	.1170
3	lb.	.0740 -	.1170

Furnace, Very Fine (VFF) (bags)

Statex K	lb.	.0740 -	.1125

Thermal, Fine (FT) bags)

P-33	lb.	— -	.0500

Thermal, Medium (MT) (bags)

Thermax (c.l.)	lb.	— -	.0300
Thermax, Stainless	lb.	— -	.0350

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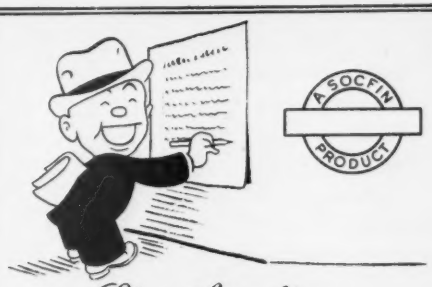

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Durez 13355	lb.	——	.26
Marbon S and S-1	lb.	.36	.43
Marmix	lb.	.36	.43
Pliolite S6 Resin	lb.	.36	.37
G Masterbatch	lb.	.35	.36
G50 Masterbatch	lb.	.35	.36
R Masterbatch	lb.	.38	.39
Polyco 220	lb.	.13	.15

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Dutch Boy Normasal	lb.	——	.42¾
ESEN	lb.	.36	.38
Retarder ASA	lb.	——	.45
Retarder W	lb.	——	.43
Retardex	lb.	.51	.54

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Herron Flake	ton	48.50	49.50
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Pioneer	ton	35.00	46.00

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Amberex	lb.	.30	.38
Brown	lb.	.16	.20
Dispersed	lb.	.27	.44
Neophax	lb.	.18	.36
White	lb.	.1300	.3200

Miscellaneous Rubber Substitutes

G.B. Asphaltenes	lb.	.06	.06½
Gilsowax	lb.	.04½	.05
Insulac	lb.	.06	.06½
Resin No. 1098 (drums)	lb.	——	.65
No. 1198	lb.	.31	.35

SOLVENTS

Acetone (dlvd.)	lb.	.07½	.09½
American Dipentine	gal.	.20	.36
American Pine Oil	gal.	.45	.56
Amsco Lactol Spirits (t.c.)	gal.	——	.16
Rubber Solvent (t.c.)	gal.	——	.15
Solv A (t.c.)	gal.	——	.22
Solv A-80 (t.c.)	gal.	——	.265
Solv B (t.c.)	gal.	——	.26
Solv B-90 (t.c.)	gal.	——	.29
Solv D (t.c.)	gal.	——	.285
Solv F (t.c.)	gal.	——	.285
Special Napthalite (t.c.)	gal.	——	.15
Textile Spirits (t.c.)	gal.	——	.16
Amyl Chlorides, Mixed (l.c.l.) (drums)	lb.	——	.08
Aromatic Solvent 40	gal.	——	.199
Benzol 90%	gal.	.17	.24
Butyl Acetate (t.c.)	lb.	——	.175
Butyl Alcohol (t.c.)	lb.	——	.175
Secondary (dlvd.)	lb.	.10	.12
Tertiary (dlvd.)	lb.	.12	.14
Carbon Bisulfide, Tech.	lb.	.05	.08
Carbon Tetrachloride	gal.	——	.80
Cosol 1	gal.	.30	.38
Cosol 2	gal.	.30	.38
Cyclohexane	lb.	.08	.10
Cyclohexanone	lb.	.25	.27 *
Diacetone, Pure (dlvd.)	lb.	.12	.14
Dichlorethyl Ether (dms.)	lb.	.16½	.17
Formal (dms.)	lb.	.26½	.27
Dichloropentane (t.c.l.)	lb.	——	.04½
Dipentene 122 (dms.)	gal.	.35	.36
Ethyl Alcohol (t.c.)	gal.	——	.375
Ethyl Alcohol SD-1 (t.c.)	gal.	——	.43
Ethyl Alcohol SD-2B (t.c.)	gal.	——	.41½
Ethylene Dichloride (drums, dlvd.)	lb.	.08	.09½
Halowax Oil	lb.	.25	.37
Heptanes (t.c.)	gal.	——	.16
Hexalin Cyclohexanol	lb.	.20	.22 *
Hexanes (t.c.)	gal.	——	.16
Isopropyl Alcohol, Ref. 99% (dlvd.)	gal.	.31	.34
Ether, Ref. (dlvd.)	lb.	.04½	.06½
Mesityl Oxide (dlvd.)	lb.	.115	.135
Methanol (dms., dlvd.)	gal.	.43	.495
Methyl Acetone, Syn. (drums, dlvd.)	gal.	.615	.65
Methyl n-Amyl Ketone (drums)	lb.	.37	.39

SOLVENTS (Cont'd)

Methyl Ethyl Ketone	lb.	.09	.11
Methyl Isobutyl Ketone (dlvd.)	lb.	.11	.13
N-5 Pentane Mix. (t.c.)	gal.	——	.11½
N-6 Hexanes (t.c.)	gal.	——	.14
N-7 Hexanes (t.c.)	gal.	——	.13
Petrolene (t.c.)	gal.	——	.10½
Picolines, Apiha, Refined	lb.	.75	1.00
Mixed	lb.	——	.45
Proprietary Alcohol (t.c.)	gal.	——	.43½
Pyridine, Refined	lb.	.80	.89
Quinoline	lb.	.50	.60
Rubber Solvent (t.c.)	gal.	——	.15
Rubsol (t.c.)	gal.	——	.08625
Skellysolve B (Hexanes) (t.c.)	gal.	——	.141
C (Heptanes) (t.c.)	gal.	——	.133
E (Octanes) (t.c.)	gal.	——	.155
R (Solvent Naphtha)	gal.	——	.109
Solvenol (dms.)	gal.	——	.36
Solvent, Crude, Light	gal.	.19	.28
Solvesso 100 (t.c.)	gal.	——	.27
150 (t.c.)	gal.	——	.27
Sunny South Dipentene	gal.	.20	.36
Sunny South Pine Oil	gal.	.45	.56
Toluene (drums)	gal.	——	.28
Toluol (t.c.)	gal.	——	.30
Trichlorethane	lb.	.11	.12
Triglycol Dichloride (dms.)	lb.	.519	.59
Tromex	lb.	.078	.083
Union Thinner 1	gal.	——	.149
3	gal.	——	.149
7	gal.	——	.139
X-7 Sp. Heptanes (t.c.)	gal.	——	.11
Xylene (drums)	gal.	——	.30

STABILIZING AGENTS (for Vinyl Resins)

Basic Silicate White Lead	lb.	.15¼	.15¾
Dutch Boy DS-207	lb.	——	.51½
Plumb-O-Sil A	lb.	——	.29¼
B	lb.	——	.30¾
Tribase	lb.	——	.26¼
Dythal	lb.	——	.39¼
Lead Stearate, Precip.	lb.	.55	.57
Fused	lb.	.60	.62
Lithium Stearate	lb.	.75	.77
Stabelan A	lb.	.55	.65
G Paste	lb.	——	1.00
XL	lb.	.55	.65
Stabilizer V-7939	lb.	——	.60
Stabilizer JCX	lb.	.49	.51
SN	lb.	——	.42
V-1-N	lb.	.44	.50
V-9	lb.	——	.85
Vanstay	lb.	.33	.35

SUN CHECKING AGENTS

Antisol	lb.	.25	.26
Heliozone	lb.	.25	.26
Sunolite	lb.	.23	.24
Sunproof	lb.	.25	.26
Jr.	lb.	.18	.19
Tonox	lb.	.50	.52

TACKIFIERS

Advaresin 100	lb.	.13½	.14
Agchem RC 30	gal.	.65	1.34
Amberol ST-137X	lb.	.33	.33½
Arcco 493-49B	lb.	.15	.17
700-25A	lb.	.14	.16
U2-24	lb.	.11	.13
Beckopol 1400 (dlvd.)	lb.	.25½	.26
Dutrex 44	gal.	——	.919
E-310 Resin Emulsion	lb.	——	.14
Galex (drums)	lb.	——	.15
Koresin	lb.	——	.75
Liquid Rubber Flux	lb.	——	.125
Pentalyn Resins (dlvd.)	lb.	.19½	.22½
Resin V	lb.	——	.23¼
Rubtack	lb.	——	.12
Staybelite Esters (dlvd.)	lb.	.2100	.2150
Super-Beckacite No. 1001 (dlvd.)	lb.	.34	.34½
Synthol	lb.	——	.20½
Vistac No. 1	gal.	——	1.32
No. 2	gal.	——	1.66
No. 4	gal.	——	1.80

THICKENERS (FOR LATEX)

Acrysol GS	lb.	.14½	.22
Alcogum A-5	lb.	.10	.12
Betanol (drums)	lb.	——	.70
Emulsorex No. 5	lb.	——	.35
Lecithin	lb.	.12	.17
Polyco 296	lb.	.13	.15
Propylene Laurate (dms.)	lb.	——	.36
Sodium Silicate	cwt.	1.10	2.00

VULCANIZING AGENTS

Selenium

Vandex	lb.	——	2.00

Sulfur

Blackbird	cwt.	——	2.30
Crystex (l.c.l.)	lb.	.19½	.23
Dispersed Sulfur	lb.	——	.09
No. 2	lb.	.10	.15
Devil (c.l.)	cwt.	——	1.75
Insoluble Sulfur 60	lb.	.13	.13½
Spider	cwt.	——	2.30
Star (c.l.)	cwt.	——	2.25
Tire	cwt.	1.75	2.35
Tube (c.l., dlvd.)	cwt.	2.25	2.85

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Latex Telloy	lb.	——	2.00
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Miscellaneous Vulcanizing Agents

VA-3	lb.	.55	.65

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Apcolene (t.c.)	gal.	——	.09½

WETTING AGENTS

Advawet No. 10	lb.	——	.35
No. 15	lb.	——	.18
No. 33	lb.	.40	.43
Aerosol OT 70% Clear	lb.	.80	1.00
Agchem SA-15 (16, 18)	lb.	.17	.29
Alrosol (dms.)	gal.	——	.48
Aquarex D	lb.	——	.76
ME	lb.	——	.92
NS	lb.	——	.60
SMO	lb.	——	.50
Areskap 50	lb.	.30	.38
Dry 100	lb.	.60	.72
Aresket 240	lb.	.30	.38
Dry 300	lb.	.60	.72
Aresklene 375	lb.	.42	.57
Dry 400	lb.	.70	.84
Armacs	lb.	.29	.76
Arquads	lb.	.24	.27
Etho-chemicals	lb.	.34	.80
Lecithin	lb.	.12	.17
Santomerse D	lb.	.43	.65
S	lb.	.12	.25
Sorbit P	lb.	——	.28
Stablex G	lb.	——	.70
Trenamine W-50	lb.	.20	.22
Triton K-60	lb.	.33½	.41
N-100	lb.	.59½	.67
R-100	lb.	.14½	.25
720	lb.	.30½	.38
770	lb.	.21¾	.29½
Vultamol	lb.	——	.17½

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Acto 450 (550-W, 600, 630)	lb.	.109	.145
Agchem SA-17	lb.	——	.29
Aquarex SMO	lb.	——	.50
A.S.T.M. Oil No. 1 (and No. 3)	gal.	1.00	1.15
Copper Inhibitor X-872-L	lb.	——	1.75
2-Ethylhexanol (dms.)	lb.	.25	.26
Glycerine, 88% Sap., Crude (dlvd.)	lb.	.20½	.21
MODX	lb.	.295	.345
NBC	lb.	——	1.50
Para Resin No. 2457	lb.	——	.04
No. 2718 (c.l.)	lb.	——	.04
Pigmented Filmite	lb.	——	.16½
Polyvinyl Methyl Ether	lb.	——	1.00
Reference Fluid SR-6	gal.	.85	1.00
SR-10	gal.	.60	.75
Resin No. 1226	lb.	.31½	.36½
Rio Resin	lb.	.50	.52
Rubber Resin LM-4	lb.	.28	.35
Santocel	lb.	——	.50
Sublac	lb.	.30	.32
Synpep N (drums)	lb.	——	.54
Thiokol LP-2	lb.	——	.90
LP-3	lb.	——	.90
Tysonite	lb.	.21½	.22¼
Vanfire	gal.	2.00	2.50
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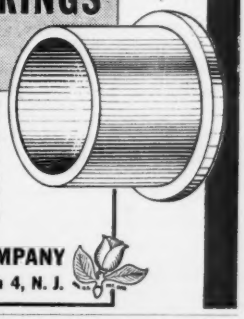

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CHIEF CHEMIST or TECHNICAL DIRECTOR: Successful Ph.D., age 38, long experience rubber, vinyls, adhesives, coatings. Publications, patents, technical society activities. Supervisional background. Location secondary. Available promptly. Address Box 543-P, RUBBER AGE.

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Wide practical experience in factory production, compounding, and development of natural rubber, synthetics and plastics. Molded items, coating and impregnating, adhesives, and high pressure plastic laminates. Can handle customer contact. Young and vigorous; married. Prefer Midwest location with stable, progressive company. Address Box 549-P, RUBBER AGE.

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Good production manager, chemical engineer, can be available. Has firm foundation in laboratory and "on the floor" factory direction, as well as higher level supervisory experience with full charge of operations. Background in molded products, injection molding of rubber, adhesives, rubber to metal adhesion, and coatings. Proven ingenuity and versatility. Married and in early thirties. Address Box 550-P, RUBBER AGE.

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(EQUIPMENT FOR SALE *continued next page*)

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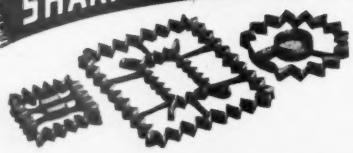

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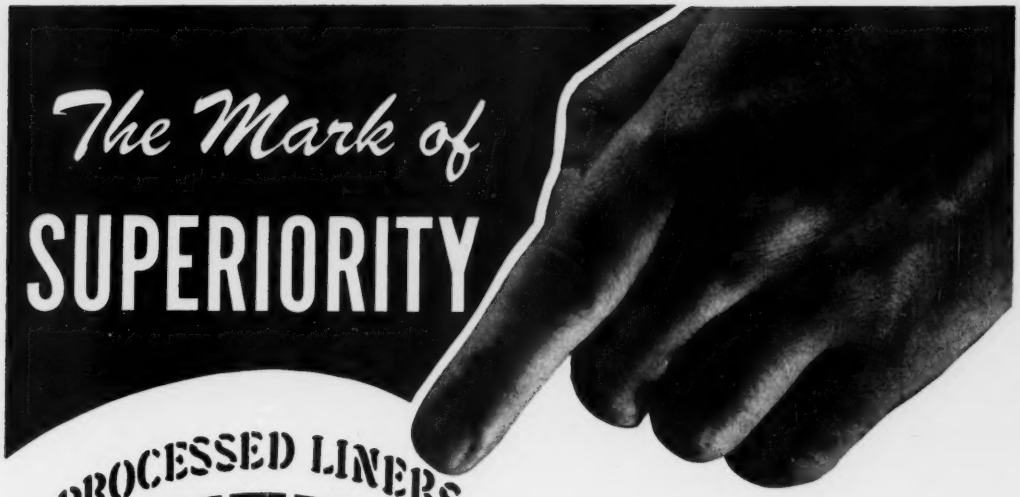

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